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CONCERNING THE PATHOLOGY AND ETIOLOGY OF THE INFECTIOUS JAUNDICE COMMON AT THE DARDANELLES, 1915.

BY

LIEUT.-COLONEL C. J. MARTIN, F.R.S., A.A.M.C.,
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DURING the autumn of 1915 troops at Gallipoli, and to a lesser extent in Egypt, suffered from a nearly non-fatal form of infectious jaundice, usually without complete obstruction to the entry of bile into the intestine, and not associated with any tendency to haemorrhages. It appeared to be markedly infectious; some units had 25 per cent. of their strength affected, and many cases occurred amongst patients in hospital for other complaints.

The first case occurred in the French lines about August 10th; during September the epidemic spread slowly until the end of that month, when it rapidly extended, reaching its maximum in October. During November it rapidly declined, and was practically over by the end of the year.

The following is an account of a case of moderate severity. All variations between this and mild jaundice without any obvious signs of illness were common.

The onset is characterized by lassitude, loss of appetite, headache, and often suffusion of conjunctivae. It is ushered in with a brief period of pyrexia, temperature 101–102°, and generally some pain in the upper abdomen. The liver becomes slightly enlarged, can be felt below the ribs, and is tender to the touch. The spleen is sometimes enlarged, but not tender.

Although the temperature may have returned to normal, these symptoms continue for three to five days, when jaundice occurs and lasts one to two weeks, or longer. The urine is bile-stained and the pulse often slow whilst jaundice is present.

By the time that jaundice is developed the patients generally feel better, but weakness continues, with rapid pulse and breathlessness on the least exertion.

Seven to ten days after the onset of the disease a distinct increase in the area of cardiac dullness may be made out.* Slight albuminuria is not uncommon.

Convalescence is slow and the patient is not good for much for a month or longer.

According to the accounts of the disease published by Sarrailhé and Clunet (1916), Willcox (1916), and by Hurst (1916), the gall bladder is often, or generally, palpable and tender. Specific enlargement of the gall bladder was not discoverable in the cases I saw, nor was this the case in the experience of my colleagues. Sarrailhé and Clunet also record two cases of "ictère grave" which developed in forty-eight hours with high temperature, speedy collapse, purpura, haemorrhages, and death. They do not mention the existence of nephritis in these.

In opening the discussion on cases of jaundice at Alexandria in November, 1915, Professor Kartulis gave a brief survey of the varieties met with in Egypt and the Levant. He described two types of epidemic jaundice as not uncommon. The first is a severe disease of sudden onset with rigor, high temperature, intense headache, vomiting, and prostration. The liver becomes enlarged and tender, and the urine contains albumin and casts. On the fourth or fifth day jaundice appears. Epistaxis, haematuria, and petechial haemorrhages are characteristic features. The urine diminishes in amount and the patient becomes unconscious or delirious. Death occurs in 30 per cent. or upwards of the cases from uraemia, haemorrhages, or secondary infections. Convalescence is very prolonged.

The milder type described by Professor Kartulis resembles the disease encountered at Gallipoli as described above, but in the Egyptian cases nephritis, epistaxis, and petechial haemorrhages would appear to be usual symptoms.

Professor Kartulis had by means of various microscopical and bacteriological methods searched for the pathogenic agent in both classes of infectious jaundice, but hitherto in vain. He suggests that it must be invisible, like that of yellow fever.

The severe form resembles very closely the infectious jaundice prevalent in certain coal mines in Japan which, towards the end of 1914, was shown by Inada, Ido, Hoki, Kaneko, and Ito (1916) to be caused by a spirochaete. They accordingly named the microbe *Spirochaeta icterohaemorrhagiae*, and the disease spirochaetosis icterohaemorrhagica. Later Ido, Hoki, Ito, and Wani (1916) found the spirochaete in 39 per cent. of the rats in the mines, and they suggest that the miners became infected from these rodents.

Spirochaetosis icterohaemorrhagica has been also described by Hübener and Reiter (1916), Gwyn and Ower (1916), Stokes and Ryle (1916), and Martin and Pettit (1916), as occurring in the German, British, and French trenches.

In the spirochaetal disease, in addition to hepatitis and jaundice, haemorrhages and an acute nephritis occur. It has a mortality of 20 to 30 per cent., and is apparently dependent upon man's association with rats for its propagation. As described above, the Gallipoli disease was much milder, was apparently more infectious, and there was no reason to suppose that rats contributed to its dissemination. Nevertheless certain striking analogies occur, and the milder types of cases described by Kartulis show many characters intermediate between our comparatively mild disease and spirochaetosis icterohaemorrhagica.

SEARCH FOR THE CAUSE OF THE DISEASE.

At Lemnos in the autumn of 1915 I was not in a position to make animal experiments. I hunted for parasites in the blood of early cases, using dark-ground illumination with fresh films and also preparations stained with Giemsa's stain, but without success. I also made blood cultures in eighteen cases, but the only positive result was that I once isolated *B. typhosus*. This patient subsequently went through an ordinary attack of typhoid fever.

The experience of Captain Campbell (1916) at Cape Helles was similar. He made sixty-four blood cultures in non-febrile cases of jaundice and obtained negative results. On the other hand, from nine blood cultures of cases running a continuous temperature he recovered paratyphoid bacilli. In five instances the organism was *B. paratyphosus* B.

Sarrailhé and Clunet had, I understood, found an organism resembling *B. paratyphosus* in the blood in a number of cases of jaundice at Cape Helles, and were of opinion that the jaundice was merely a manifestation of paratyphoid fever. I therefore tested the serums of 37 cases two or three weeks subsequent to the onset of an attack of jaundice. Fifteen of the cases had had continuous fever for some time. Out of the 15 the serums of 7 agglutinated *B. paratyphosus* A and 2 *B. paratyphosus* B. The serums of the remaining 22 cases which had had no continuous fever gave no agglutination with either of the paratyphoid bacilli in a dilution of 1 in 50.

As both jaundice and paratyphoid fevers, especially paratyphoid A, were very common at the Dardanelles during October and November, 1915, it is not unreasonable to suppose that in some instances the two diseases were superimposed. As previously mentioned, a number of patients contracted jaundice in the hospital. In some cases the jaundice may have supervened as a complication of paratyphoid, cholecystitis being a not uncommon sequela of this disease. Jaundice, however, is rare.

Another line of inquiry was undertaken at Major Hurst's suggestion, and with his help. Having with him an Einhorn's evacuator, Major Hurst persuaded patients to swallow it, and, when it had passed on into the duodenum, aspirated a few cubic centimetres of the duodenal contents, which were submitted to bacteriological examination forthwith. Duodenal samples from 8 cases of jaundice and from 4 normal individuals, including Major Hurst and myself, were examined; 0.02 c.cm. of the material was plated out upon MacConkey's bile salt agar, and also upon ordinary nutrient agar. Specimens of the different types of colonies were picked off, sown upon agar slopes, and subsequently investigated. The investigation of the cultures was carried out by my colleague, Sister F. S. Williams, for which, and for much other help with the

* This was first pointed out by Lieutenant-Colonel Willcox.

observations in this inquiry, I am deeply grateful. The results were as follows:

Three of the plates were sterile—two jaundice and one control.
Nine of the plates grew organisms varying from 10 to 300 per plate.
Five types of bacilli were isolated.
Four types of cocci were isolated.

Only one type of microbe was universally present, and accounted for the great majority of the colonies. This was a small, non-motile, Gram-negative bacillus, which fermented no sugar, and did not form indol. This bacillus was present in all six of the plates from jaundice cases which grew anything at all, and three of the controls. It is apparently a non-motile member of the *faecalis alcaligenes* group common in the upper part of the alimentary canal. On first culture some of these colonies were much denser than others, but on subculture this difference tended to disappear.

The remaining types of bacilli were also all Gram-negative. Their characteristics are given below. Two of these types occurred in Case V, one in Case II, and one in Case VIII.

TYPES OF MICROBE CULTIVATED FROM DUODENUM.

Bacilli.

Appearance of Colony.	Appearance of Bacillus.	Fermentation of Sugars.					Indol.
		Lactose.	Glucose.	Mannite.	Dulcite.	Saccharose.	
A. Translucent	Short non-motile	A	A	A	0	0	0
B. Translucent	Short motile	0	0	A	0	0	0
C. Dense white	Short motile	A G	A G	A G	0	A G	0
D. Dense white	Short motile	0	A	A	0	0	0

Cocci.

The cocci were all Gram-positive with a tendency to form diplococci; two types occurred in Case IV, one in Case II, and one in Case V.

Appearance of Colony.	Appearance of Microbe.	Fermentation of Sugars.					Indol.
		Lactose.	Glucose.	Mannite.	Dulcite.	Saccharose.	
A. Dense white ...	—	0	0	0	0	0	0
B. Small glistening	—	0	A	0	0	0	0
C. White	—	0	A	0	0	A	0
D. Large yellowish	—	A	A	A	0	A	0

The only organism showing any general association with jaundice was the bacillus of the *faecalis alcaligenes* group and that was equally abundant in the controls. The other microbes were distributed haphazard, so that the results lend no support to the view that the jaundice is due to a microbial infection of the duodenum extending up the bile ducts.

MORBID ANATOMY.

As mentioned above, jaundice at Gallipoli was rarely fatal. Three cases died in No. 3 Australian General Hospital, in whom jaundice was still present at the time of death. In two of these the cause of death was cardiac syncope occurring some weeks after the onset of the illness, in the other jaundice supervened during an attack of paratyphoid B fever. *Post-mortem* examinations were made upon these cases by my colleague Major Upjohn, but as in two patients death occurred during convalescence, and in the case of the third the jaundice might have been a complication of his paratyphoid fever, one cannot expect to derive therefrom much information as to the essential pathology of the disease.

The following is a brief epitome of the notes made by Major Upjohn at the autopsies.

CASE I.

A young Maori admitted October 3rd, 1915, with fever, diarrhoea, abdominal pain, and vomiting. Symptoms maintained until October 10th, 1915, when he became delirious and violent, and died on October 11th. Slight jaundice developed a few days before death.

Post mortem: Heart and lungs normal; spleen enlarged. Liver enlarged, yellow, tough; excess of fibrous stroma. Gall bladder full of bile, which could, however, be slowly emptied into the duodenum by slight pressure. Small intestine injected, especially Peyer's patches in lower portion, no ulceration. Brain normal. *B. paratyphosus* B was recovered from the spleen and gall bladder.

CASE II.

Pte. C., aged 41, admitted October 25th, 1915, with slight rise of temperature, pain and tenderness over liver, jaundice, and great lassitude. On November 7th he was convalescing slowly, still weak and breathless. On November 21st he died suddenly during slight exertion.

Post mortem: Mildly jaundiced. Heart dilated, flabby, muscle light in colour. Liver usual size and consistency; olive brown in colour, gall bladder empty. Spleen normal size and appearance. Intestines normal. Spleen and bile sterile.

CASE III.

Pte. McP., aged 35, suffered from jaundice some weeks previously. Admitted from a convalescent dépôt, where he had been taken suddenly ill with rapid pulse and breathlessness, and pain in right hypochondrium. He died four hours after admission.

Post mortem: Heart dilated and flabby, muscle pale. Liver large, greenish, friable; gall bladder contained a small amount of bile. Spleen enlarged, soft. Kidneys pale, enlarged, and friable. Bile and spleen sterile.

Morbid Histology of the Liver.

The histological changes in the liver of both the cases which died some weeks after the onset of the jaundice attack were similar. Sections stained with logwood and viewed with the naked eye or a hand lens presented a marbled appearance, the outer portion of the lobules being stained, the inner colourless. Small deeply staining areas where compensatory hypertrophy of liver tissue had occurred were scattered throughout the sections.

In each portal area there was small celled infiltration, with young fibrous tissue, and large cells full of pigment granules. The epithelium cells of the small bile ducts were proliferated, and many of the ducts appeared not to be patent. Deposits of the same pigment granules existed between the cells.

The outer half of the liver cells of the lobule appeared normal, but the inner half were more or less damaged. The cells adjacent to the intralobular veins were necrosed and indistinguishable as liver cells; more peripherally they were vacuolated. They did not contain fat. Amongst the degenerated cells were a number containing pigment granules. The distribution of this pathological change was not uniform, some groups of lobules being more severely affected than others. There was no dilatation of the blood capillaries. No bacteria were seen.

Small portions of the liver of both patients were treated by Levaditi's silver method for demonstrating spirochaetes. In neither case was there any suggestion of their presence.

The gist of the above results was communicated at the discussion on jaundice at the Anzac Medical Association, Cairo, on February 6th, 1916. At that time it did not seem worth while putting them on record, as I expected to encounter the disease again in Egypt the next autumn, and to be able to carry out experiments on animals. The disease did not, however, reappear among troops in epidemic form during 1916, so that I had no chance of completing the inquiry.

My object in recording them at this juncture is two-fold. First, the information may direct future investigators along more fruitful lines of inquiry; and secondly, because in the meantime conclusions regarding the etiology and pathology of the disease have been published which seem to be open to question.

MM. Sarrailhé and Clunet (1916), the pathologists to the French force at Cape Helles, conclude that the epidemic jaundice at Gallipoli was merely a manifestation of paratyphoid A fever. These gentlemen were in the habit of making blood cultures of suspected cases of enteric, and up to the end of August they recovered only *B. paratyphosus* B and *B. typhosus*. At this time they noticed a clinical modification of the (enterica) epidemic. Cases of gastric derangement with fever became less numerous and less severe, many were accompanied by "extension to the biliary passages," and numerous cases of jaundice occurred. Coincident with this modification in clinical type the

nature of the microbes isolated by blood culture changed. The organisms they now recovered corresponded in general characters to paratyphoid bacilli, but would not agglutinate with either their paratyphoid A or paratyphoid B serums from the Pasteur Institute. They provisionally regarded it as a new type, *B. paratyphosus* "D" (= Dardanelles). They state that from nearly all their cases of jaundice, and from those of "gastric derangement with fever" during the jaundice epidemic they found no longer *B. typhosus* and *B. paratyphosus* B, but this atypical variety.

In a later paper (1916) the authors report the result of the examination of ninety-four of the aberrant strains at the Pasteur Institute. Eighty-four strains were declared to be *B. paratyphosus* A, six *B. paratyphosus* B, and four *B. typhosus*. However, MM. Sarrailhé and Clunet see no reason to modify their opinion that "camp jaundice is merely a hepatic manifestation of the paratyphoid epidemic."

The main epidemiological features described by MM. Sarrailhé and Clunet as occurring in the French lines were repeated at Lemnos, but the same close relationship between jaundice and paratyphoid A was not observed either clinically or in the bacteriological laboratories.

Captain Archibald and his colleagues (1916) at Mudros East found that in September and October the incidence of paratyphoid B steadily rose and was the prevailing type, but about the middle of November the number of cases of paratyphoid A shot up, while that of paratyphoid B rapidly fell, the typhoid cases, as before, remaining low. Our experience at No. 3 Australian General Hospital at Mudros West indicates a more gradual and later change of type. During October, November, and December the number of bacteriologically diagnosed cases of paratyphoid A was 83, 76, and 45; of paratyphoid B 34, 40, and 18 respectively, but after the third week in December only paratyphoid A was met with. Jaundice was first observed in September. In October the number of cases admitted rapidly increased. During the later weeks of October and early weeks of November it was extremely common amongst troops and hospital personnel stationed at Mudros, and numbers of patients contracted the disease in the hospital.

Judged by admissions to No. 3 Australian General Hospital, the epidemic of paratyphoid A was in full swing when jaundice appeared. Some patients suffering from the former undoubtedly had jaundice, but the same was the case with patients suffering from typhoid, paratyphoid B, and dysentery, and the impression made upon us was that we were in the presence of two widespread epidemics, one of which was occasionally superimposed upon the other. The same conclusion was arrived at by Lieutenant Campbell (1916) from his experience at Cape Helles.

The experience of MM. Sarrailhé and Clunet was evidently different from ours, and it is difficult to disprove their contention. I can only point out that the prevalent type of jaundice at No. 3 Australian General Hospital, which is described at the commencement of this paper, was not accompanied by a continuous fever, and that paratyphoid bacilli were not recovered from such cases, nor did their serums agglutinate *B. paratyphosus* A or B, although the strains of both of these organisms which we employed were readily clumped by the serums of patients suffering from these diseases. Instances such as they record did occur, but can, I submit, be more reasonably interpreted as double infections. Paratyphoid fever has been abundantly studied in different parts of the world since its first differentiation by Achard and Bensaude in 1896, but jaundice is surely a rare symptom, for I cannot discover a single recorded instance of its occurrence in the literature.

Another account of the disease given by Major Hurst (1916) seems to me to accept too readily one possible view of its pathology. According to this observer the jaundice is caused by an extension of a catarrhal process from the duodenum, and the enlargement of the liver "must be due to a general infection secondary to that of the alimentary canal." I am not clear exactly what Major Hurst had in mind in framing the first part of the sentence, but the latter portion is unmistakable. However, Major Hurst is evidently not entirely satisfied with this view, for on p. 106 he admits that it is uncertain whether the primary infection is duodenal or through the blood.

Willcox (1916) also inclines to the opinion that the epidemic jaundice of campaigns starts as a gastro-intestinal infection, and that cholangitis follows from spread from the duodenum. This view leads both Willcox and Hurst to the conclusion that infection is conveyed by the alimentary tract.

It is with trepidation that I enter the arena against Lieutenant-Colonel Willcox and Major Hurst when the combat is over matters largely clinical, but it seems to me unfortunate that, in the absence of definite knowledge of the etiology of the disease, these gentlemen should thus light-heartedly throw the weight of their authority in favour of one possible interpretation of its pathology and method of spread. I submit that the picture presented by the infectious jaundice at Gallipoli, and the morbid anatomy, meagre as it is, are more consistent with the view that we are dealing with a hepatitis following a systemic infection than with that of a catarrhal jaundice from plugging of the bile ducts from extension of an inflammatory process from the duodenum.

The reasons which influence me in arriving at this conclusion are briefly:

1. The illness is ushered in by a febrile attack like influenza, but usually of shorter duration.
2. Jaundice does not occur for some days, and is preceded by swelling and tenderness of the liver.
3. Bile is rarely completely prevented from entering the intestine.
4. The spleen is often enlarged.
5. Albuminuria is not uncommon.
6. Notwithstanding the comparatively slight initial illness the existence of a serious toxaemia is indicated by lassitude, which endures for some weeks, and evidence of myocardial poisoning.
7. Histological evidence of necrosis of liver cells and inflammation around the portal areas.

SUMMARY AND CONCLUSIONS.

1. No parasites were discovered in blood films taken during the disease.
2. Blood cultures were sterile unless the jaundice supervened during an attack of typhoid or paratyphoid.
3. The observations made at No. 3 Australian General Hospital at Mudros do not support the conclusion of MM. Sarrailhé and Clunet at Cape Helles that the jaundice was merely a manifestation of paratyphoid fever.
4. Bacteriological analysis of duodenal contents removed from patients affords no justification for the view that the jaundice was due to a bacterial infection spreading up the bile ducts.
5. The livers of two patients who succumbed during the convalescent stage of jaundice showed microscopical evidence of hepatitis with necrosis of liver cells.
6. It is pointed out that the infectious jaundice of Gallipoli, although much milder, presents analogies to the severer form spirochaetosis icterohaemorrhagica, and it is contended that the symptomatology and morbid histology are consistent with the view that it is primarily a systemic infection.

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INFECTION OF HAEMOTHORAX BY ANAËROBIC GAS-PRODUCING BACILLI.

BY

LIEUT.-COLONEL T. R. ELLIOTT, F.R.S., R.A.M.C.,

AND

CAPTAIN HERBERT HENRY, M.D., R.A.M.C.

(A Report to the Medical Research Committee.)

(Concluded from p. 418.)

THE MAIN CLINICAL TYPES.

THE forms in which infections of a haemothorax by anaërobic gas bacilli may present themselves fall clinically into five distinct groups, which are differentiated by the predominance of *toxic* symptoms or of the features of *gas formation* respectively. These cannot, so far as we know at present, be correlated with particular varieties of the infecting bacilli, though they are to some extent governed in their development by the admixture of anaërobes with streptococci and other organisms.

The groups comprise the following:

Acute or Fulminating.

These may develop to a fatal issue two or three days after the wound.

1. The *acute pneumothorax type*, in which gas is formed with overwhelming abundance, and to some extent overshadows the toxic features of the illness.
2. The fulminating septic type with jaundice or delirium.

Progressive.

In these the infection becomes evident from the fourth or fifth day onwards.

3. The *pneumothorax type*, in which the chief feature is a localized or free collection of malodorous gas within the pleural cavity, while the toxic features are relatively mild.
4. The *toxic* forms are characterized by: Jaundice, epistaxis, and fever; restlessness, pain, and delirium; tachycardia, fever, and a hectic flush of the face.

Chronic.

5. These develop simply as an ordinary empyema, without marked features of sepsis or the liberation of much gas.

The cases described below as illustrations of these various clinical types were all seen, by the courtesy of the various medical officers concerned, in the military base hospitals at Boulogne.

ACUTE PNEUMOTHORAX TYPE.

CASE I.—*Early Death from Infection which was Wrongly Regarded as a Simple Pneumo-haemothorax.*

Pte. T. April 25th, 1915. Wounded in chest by shell.

Second day: Admitted to base hospital; cyanosed and collapsed. Temperature 98.6°, pulse 118, respirations 28. Heart displaced two inches to the left, and signs of extensive pneumo-haemothorax on the right side.

Third day: Heart not displaced any further. Constant irritable cough. Temperature 98.6°, pulse 120, respirations 36. Slight tendency to mental wandering. Death.

Autopsy found very foul gas and blood in the pleural cavity. The middle lobe was perforated by a ragged wound, and the lung was covered with septic clot which was pitted with raindrop markings from the development of gas within its substance. (Specimen in War Office collection.) There was early suppurative pericarditis and a necrotic laceration of the liver.

The clinical opinion, on account of the absence of fever, was that the haemothorax was sterile and that the wound had caused death by progressive haemorrhage and escape of air into the chest. The rapid pulse and the tendency to delirium should have corrected this wrong diagnosis. Probably the infection was so serious that the man's life could not have been saved. Without an autopsy to prove the infection, opinion would naturally have regarded this early death as due to an ordinary pneumo-haemothorax, which had been aggravated by the journey to the base on the second day.

CASE II.—*Septic Case, Mimicking Acute Pneumo-haemothorax; Rib Resected: Recovery.*

Sapper H., R.E. June 5th, 1915. Wound of right chest by rifle grenade.

Seventh day: Moved to base hospital. Dyspnoea increased rapidly in the train, and the patient arrived almost pulseless.

Eighth day: Very ill, but perfectly conscious. Slight cyanosis. Body bathed in icy cold sweat. Tongue clean, but tremulous. Temperature 100°, pulse 132, respirations 40. Heart displaced 2½ inches to left and signs of large pneumo-haemothorax on right. Except for the toxic sweat, the patient's condition was exactly what would have been expected from a supposed leak of air and blood caused by the journey. Explored: Foul gas and dark purple blood, which was teeming with *B. sporogenes*. Intercostal drainage at once, since the patient was too collapsed to endure a fuller operation.

Tenth day: Rib resected.

Twenty-fourth day: Recovered well. No secondary fever. Heart back to normal position, but right lung still much collapsed. Patient discharged to light duty at end of three months.

CASE III.—*Large Gas Pneumo-haemothorax: Recovery by Drainage, but Death from Secondary Haemorrhage.* (See Chart 1.)

Pte. B., Shropshires. June 4th, 1916. Wounded in back of chest by shell fragment. Haemoptysis.

Eleventh day: Arrived at base, extremely collapsed. Temperature 97°, pulse 120, respirations 40. The orderly officer on night duty at once aspirated 20 oz. of foul blood. A few hours later, the patient was still desperately ill, and slightly delirious, but not jaundiced. The left side of the chest was immobile, and bulged outwards by an enormous intrapleural collection of gas. The heart was displaced beyond the right nipple, and the veins of the neck were distended. Part of a rib was now resected under local anaesthesia, and clots of blood had to be pushed aside in order to liberate the foul gas from within. The organisms were not identified.

Fifteenth day: Heart almost back to normal position. Patient very comfortable and looking well. Temperature 100°, pulse 110. Eusol lavage of pleural cavity.

Twenty-second day: Patient so well that evacuation to United Kingdom was promised in a couple of days' time.

Twenty-third day: A little fresh blood appeared in the sputum. Temperature rising to 102°. Patient complained of "gassy smell in his mouth and a feeling like a football in his chest."

Twenty-fifth day: Haemoptysis of 2 oz.; then sudden blanching and collapse of patient, with death in half an hour.

Autopsy found that the empyema cavity was filled with a completely moulded massive clot from recent haemorrhage. There was blood in the left bronchus, and the stomach was filled with blood. An irregular piece of shell, 1 in. in length, was found in a septic cul-de-sac in the lung, which expanded into a gangrenous cavity about 2 in. across. This was lined by pyogenic membrane, and was full of most offensive pus. From the cavity a channel opened on to the pleural surface of the lung, and a small aneurysm in the wall of the latter had ruptured. (Specimen in War Office collection.) The wound in the chest wall was cleanly healed throughout its track, although the head of the tenth rib had been comminuted.

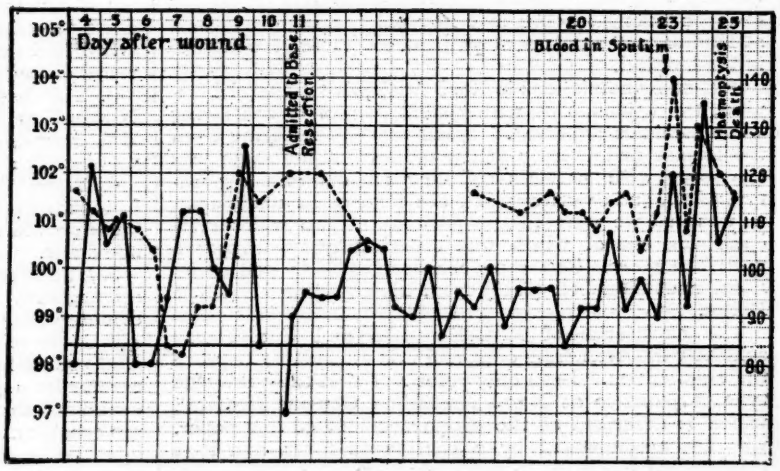

CHART 1.—From Case III, commencing on the fourth day after the wound. The pulse-rate per minute is shown on this and all succeeding charts by the heavily dotted line, and the readings of this curve are given by the numbers on the right hand side of the chart. The paper upon which these charts are drawn gives slightly wider spacing vertically, and therefore a greater magnification of the curves than that given by the ordinary Army Form B 181.

The retention of the foreign body within the lung was undoubtedly the cause of this secondary haemorrhage and of death. It will be observed that in this case, where the bleeding occurred into a relatively immobile empyema cavity, the blood formed a clotted mass without that separation of fluid which is seen in the ordinary traumatic haemothorax. Also it should be noted that the bleeding was so rapid that the blood had drained down the oesophagus and filled the stomach. Had death not occurred, this distribution might later have led to haematemesis and melaena with difficulty in deciding whether the blood was derived from the lung or from a traumatic gastric ulcer. (Cp. Elliott and Henry, BRITISH MEDICAL JOURNAL, April 8th, 1916, p. 523.)

ACUTE TOXIC TYPE.

CASE IV.—*Early Jaundice and Delirium: Shell Fragment Embedded in the Lung.*

Pte. C., Notts and Derbys. October 7th, 1915. Penetrating shell wound of left chest. No haemoptysis.

Second day: Arrived at base hospital; restless and slightly delirious. Jaundice commencing; dyspnoea and pain in side; signs of large left haemothorax, but patient so ill that no exploration was attempted. He died on the following day.

Autopsy: Left lung in contact with anterior chest wall as far down as the fourth rib in front. Below that level lay a malodorous collection of blackish-purple blood, in which abundant bacilli were found. There was no free gas and no obvious pus. Shaggy clot covered the lung. A shell fragment surrounded by foul-smelling clot lay inside the lung, which was widely infarcted. (Specimen in War Office collection.) The base of the right lung was very oedematous. The body showed signs of universal septicaemia by gas bacilli and the liver veins were blown out with gas.

PROGRESSIVE PNEUMOTHORAX AND TOXIC TYPES.

CASE V.—*Slow Development of Large Gas Pneumothorax, Non-toxic Type.* (See Chart 2.)

Pte. W., Royal Fusiliers. August 6th, 1916. Shell wound of left chest, through first space in front with foreign body lying deeply below left edge of sternum.

Third day: Arrived at base hospital.

Thirteenth day: Continued fever, but no marked tachycardia. Patient looks and feels well. Physical signs of simple haemothorax, which was aspirated, yielding 40 oz. of fluid with deep haemolysis and a purulent deposit on centrifugalization. No gas was found. A few degenerated bacilli were seen in films, and anaërobic culture revealed a stout Gram-positive bacillus which resembled but was not identical with *B. perfringens*.

Nineteenth day: Almost afebrile and feeling very well; but the physical signs now indicated a large collection of gas extending up to the second rib in front with a very little fluid behind. The gas was found to be offensive. Rib resection, and drainage tube sewn in by Captain Fitzmaurice Kelly. Suction applied up to −4 cm. mercury for five days, so as to expand the lung.

Twenty-sixth day: Ordinary tube drainage.

Thirty-eighth day: *X* ray showed that the empyema cavity was now quite small.

At the eleventh week the patient was up and about in an English hospital, but the sinus was not yet closed.

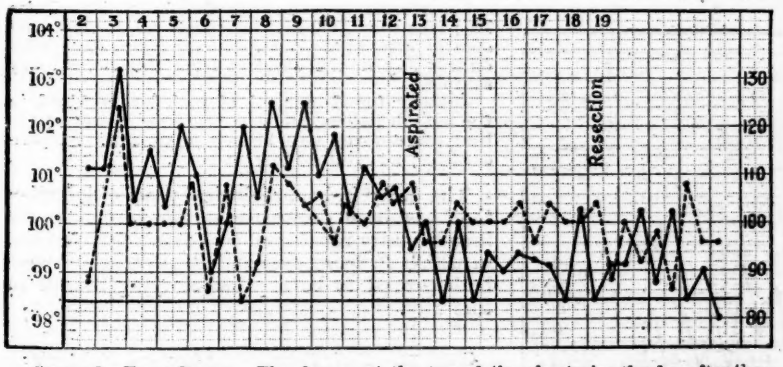

CHART 2.—From Case V. The figures at the top of the chart give the day after the wound. It will be noted that the pulse-rate was low relatively to the temperature, but that it remained near 100 when the temperature sank to 99° after the first aspiration.

This case illustrates the slow development of gas by the action of an unknown anaërobe that was relatively non-toxic. The chief disadvantage of the infection was that resulting from the collapse of the lung, and for such a case suction drainage was particularly well adapted. The foreign body was left *in situ*.

CASE VI.—*Rapid Displacement of Heart: Localized Collection of Gas.*

Pte. A., Scottish Fusiliers. March 12th, 1915. Shell wound of right chest.

Third day: Heart displaced half an inch, and signs of moderate haemothorax. Tongue lightly coated with creamy fur. Temperature 100°.

Fifth day: Flushed and cyanosed; slight icterus. Temperature swinging, 99° to 102°. Increased dyspnoea. Pain in right axilla. Cardiac impulse much more displaced, two inches to left of nipple. Patch of tympanitic percussion note at angle of scapula behind, where previously it had been dull. Exploration over this resonant area yielded gas that smelled like rotten eggs, and purple blood infected with *B. perfringens*. Rib resected at once. No pus found, but only blood clots and dark fluid which coagulated to a jelly as it escaped from the chest. Except for the smell and the dark venous colour, what was found at resection resembled the contents of an ordinary sterile haemothorax.

The patient acquired secondary infections of the cavity, and recovery was delayed until the fifth week, but ultimately was satisfactory.

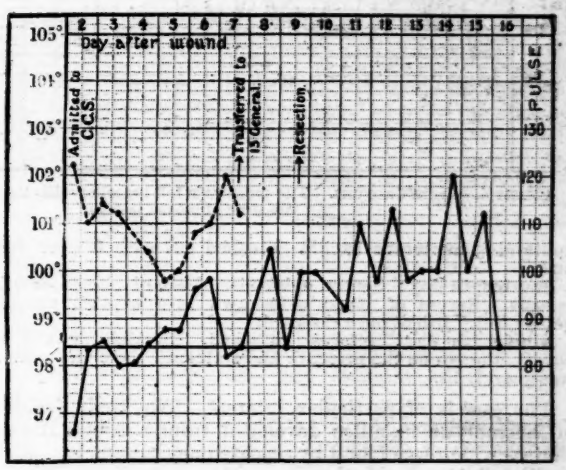

CHART 3.—From Case VII. The early tachycardia despite the absence of fever or of clinical features of collapse is the notable feature.

CASE VII.—*Mixed Infection by Anaërobes and Cocci; yet Clinically a Non-toxic Type.* (See Chart 3.)

Pte. R., Royal Warwicks. June 27th, 1916. Wound of left chest by shell.

Seventh day: Arrived at base hospital. Afebrile, but always a rapid pulse, 100 to 110.

Ninth day: Looks well. Clean tongue. Pain and tenderness of left side of chest, which was associated with traumatic herpes zoster over the eighth thoracic skin segment, and was therefore of uncertain indication. Temperature rising to 100°. Heart displaced nearly to right nipple, and physical signs of large and complete pneumo-haemothorax. The clinical appearance suggested that this was sterile. Aspirated; pressure +5 cm. water. Foul gas removed, and haemothorax fluid with a heavy deposit of pus containing anaërobe bacilli, staphylococci, and streptococci. Resected same night.

Fourteenth day: Temperature higher, but the patient remained very well, and never exhibited a toxic aspect. Normal recovery.

Combined infections of streptococci and anaërobic bacilli are often most virulent and grave. Yet the only features indicative of sepsis in this case were the tachycardia and the pain in the side.

CASE VIII.—*Toxic Type. Localized Gas at first, and later a Haemolytic Jaundice developing while the Infection was being treated by Eusol Lavage without Rib Resection.* (See Chart 4.)

Gunner H., Northumbrian R.F.A. February 13th, 1916. Wounded in back of right chest. Shrapnel ball removed from under skin of right axilla next day.

Third day: Arrived at base hospital.

Sixth day: Typical clinical picture of moderately severe infection of haemothorax by anaërobes. Flushed face. Pulse 100, temperature 101°, respirations 40. Heart displaced half an inch to the left; "cracked-pot" percussion note just below angle of scapula. Explored: Foul gas; reddish blood, not purple, and a little purulent deposit with abundance of *B. perfringens* in films. Aspirated: Pressure −0 cm. volume, 10. oz. of blood and also some foul gas. Washed out with 0.25 per cent. eusol. The cavity was small, for when the contained volume of eusol was reduced by aspiration from 18 to 8 oz., the intrapleural pressure fell from +7 cm. to −5 cm. water.

Seventh day: Aspirated: 10 oz. offensive fluid containing abundant bacilli. Flushed out with 0.5 per cent. eusol, which did not cause any phenomena of pleural irritation.

Tenth day: Tongue clean; appetite fair. No pain in side. Heart apex beat back to nipple. Aspirated: pressure found to be −5 cm., volume about 6 oz. of inoffensive reddish fluid,

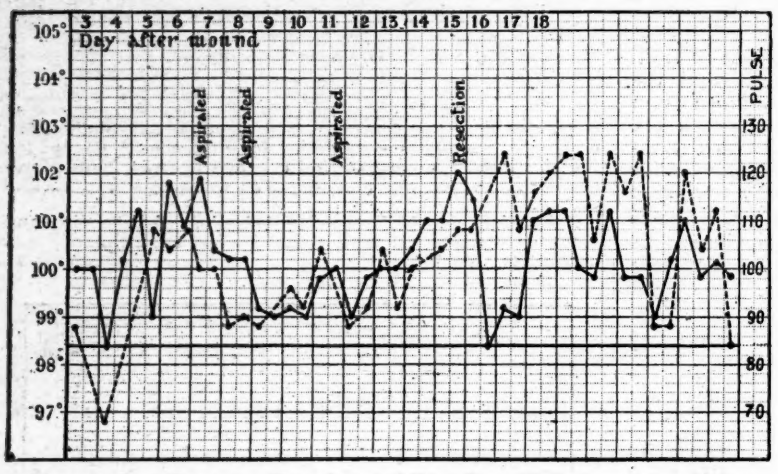

CHART 4.—From Case VIII. The pulse-rate fell together with the temperature during the time of closed lavage.

containing numerous bacilli. Flushed out with 0.5 per cent. eusol.

Fourteenth day: Severe epistaxis. Patient shows definite icterus. Serum of blood withdrawn into capsule exhibits yellow tint. Rib at once resected.

Nineteenth day: Icterus vanished. Straightforward recovery, though on the fifteenth and sixteenth days the patient was gravely ill.

The case is of particular interest. The toxic features of haemolytic jaundice developed from a septic haemothorax, which was found by repeated aspirations to contain nothing but anaërobic bacilli.

CASE IX.—*Delayed Proof of Bacteriological Infection. Air Pneumothorax Lying Above and Separated from a Septic Haemothorax Clot.* (See Chart 5.)

Pte. L., D.L.I. December 26th, 1915. Wound of right chest behind by shrapnel ball, which remained embedded close to hilum of lung. Walked one hundred yards, and then felt urgent dyspnoea. Haemoptysis next day.

Fifth day: Arrived at base hospital, under care of Captain Stratton.

Tenth day: Temperature rising. Physical signs at left base (P.N. dullish, V.R. increased, B.S. almost tubular, but no râles) of either contralateral pneumonia, which might have caused the fever, or of massive collapse. On the right side a large mobile pneumo-haemothorax. Explored at right base: Dark-red odourless haemothorax fluid, containing many pus cells, but sterile in films and on culture.

Twelfth day: Fever increasing. Tongue clean. No tachycardia. Aspirated: well forward in axilla; pressure = 0 cm.; inoffensive air removed and 25 oz. reddish turbid fluid, which

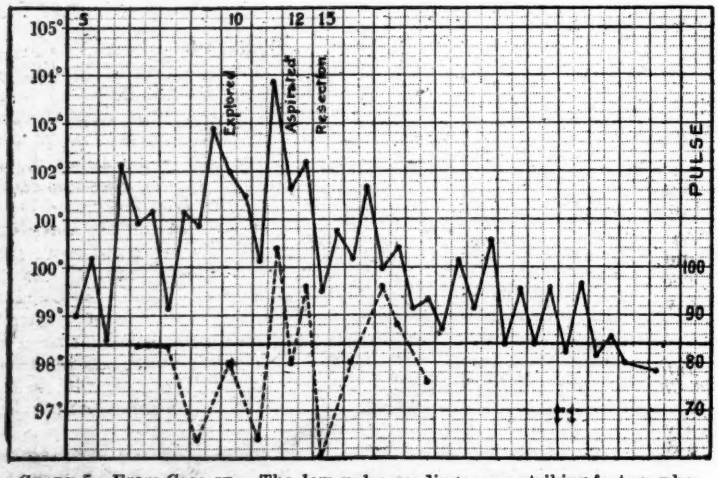

CHART 5.—From Case IX. The low pulse readings are a striking feature when taken in contrast with the high fever.

contained polymorphs and gave a full secondary gelatinous clot, but was sterile. The trocar was then pushed through an area of resistance at the back, when it drew off 6 oz. of purple-red offensive blood, which was full of *B. sporogenes*.

Thirteenth day: Rib resected behind; blood clot not dislodged, and tube introduced only a short distance.

Twenty-second day: Afebrile and very well. Heart apex beat back to nipple. Draining only bloody serous fluid and no pus.

The ball was never removed. The sinus did not close until the seventh month, and the patient was discharged unfit for service; ultimately a poor result.

Since the free fluid below the pneumothorax was sterile, it seems almost certain that this anterior collection was caused by an air leak from the lung. *B. sporogenes* always produces an offensive smell in its growth. The case illustrates the advantage of a preliminary aspiration, for by this means the lung was expanded and the spread of infection over the whole pleural cavity was avoided.

CASE X.—*Toxic Type without Jaundice. Death due to Postponement of Resection on Account of Delay in Bacteriological Proof of Infection.* (See Chart 6.)

Pte. U., R.A.M.C. April 18th, 1915. Shell wound perforating left chest.

Third day: Arrived at base hospital.

Fifth day: Looks well. Fresh red haemoptysis. Signs of moderate left effusion.

Ninth day: Effusion larger. Pain in left side. Pulse 110, and persistent fever at 100° to 101°.

Twelfth day: Flushed face; feels ill. Temperature rising to 102°, pulse 120. Aspirated posteriorly below the angle of the

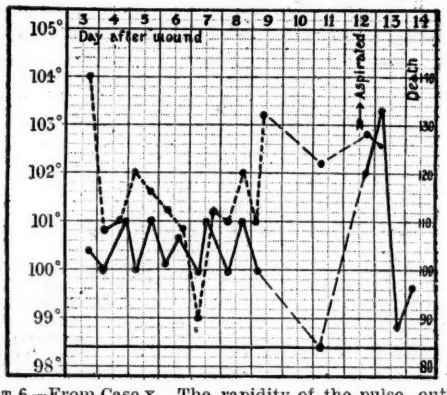

CHART 6.—From Case X. The rapidity of the pulse, out of all proportion to the temperature, should have been recognized as indicative of sepsis and should have led to earlier and more successful treatment of this case.

scapula; 30 oz. odourless, dark carmine fluid with crimson clot. Polymorphs in excess, but no organisms seen in films. The clinical opinion desired resection, but this was delayed on account of the bacteriological report.

Fourteenth day: Tongue dry in centre. Pulse 126; face very flushed. Said that he felt ill, and shortly afterwards died. *B. perfringens* was found on this day in the cultures from the twelfth day sample.

Autopsy found a pool of malodorous blood in the left rib hollow, and the posterior aspect of the lung was covered with shaggy septic clot. No pericarditis; no retained foreign body.

The delay in bacteriological proof of infection that has been discussed earlier in this paper is sufficiently illustrated by Cases IX, X, and XII, in which *B. sporogenes* and *B. perfringens* were both proved to be capable of lying hidden in this way.

CASE XI.—*Toxic Form. Jaundice and Epistaxis: Death.*

Pte. H., 67th Canadians. September 5th, 1916. Shell wound over sixth dorsal spine, and *x* ray subsequently showed a fragment close to vertebral column in the seventh intercostal space on left side.

Second day: Arrived at base hospital.

Sixth day: Epistaxis commenced. Temperature upheld at 101°.

Seventh day: Jaundice noticed.

Eighth day: Renewed epistaxis. Very yellow icterus. Temperature 101°, pulse 108. Says that he feels well, but talks as though verging on light delirium. Explored at once on left side; dark purple blood infected by *B. perfringens* and *B. sporogenes*. Resected a few hours later.

Ninth day: No vomiting. Now a waxy-white colour, and extremities very cold. Temperature 98°, pulse 108 and very small. Eusol was injected intravenously, and produced a temporary recovery with each injection, but apparently only as a result of the volume of fluid infused. Death took place on the following day.

Autopsy showed that the left pleural cavity was perfectly drained, while on the right side contalateral massive collapse was found in its usual anatomical distribution throughout the middle sector of the lower lobe. The heart was normal.

The importance of epistaxis and of jaundice as a danger signal was not recognized as soon as these features appeared in this case. Consequently, exploration and rib resection were delayed for two days, and the patient passed beyond the chance of recovery. In other septic cases with similar features of toxic jaundice earlier resection was followed by a perfectly satisfactory recovery.

CASE XII.—*Toxic with Inoffensive Gas; Semi-delirious, but of the Rarer Pallid Type, Delayed Bacteriological Proof.*

Cpl. J., Gloucesters. July 3rd, 1916. Septic shell wound of back of right chest; did not bleed much externally.

Third day: Arrived at base.

Fourth day: Ill, restless, and semi-delirious; but of pallid white aspect, being neither cyanosed nor flushed. Temperature 100° to 102°, pulse 90, respirations 32. Physical signs of contralateral collapse of left base, and a fairly large effusion on right side with tympanitic percussion note close to angle of scapula amid the area of dullness. Explored behind: Inoffensive haemothorax fluid, yielding a slight excess of polymorphs on centrifugalization and no organisms in films. Abundant growth of *B. perfringens* in twenty-four hours' culture.

Fifth day: Pain in right side; more restless. Clean tongue; pulse 90. Neither jaundice nor hectic flush. Explored: Inoffensive gas; more pus in fluid, but still no organisms in films. Rib resection.

Eighteenth day: Heart back to normal position. Pulse never rose above 90 throughout the illness. Recovery was delayed because the drainage hole was too high.

These septic cases with pallor are very rare in our experience. The semi-delirious state and the pain indicated the infection before it could be proved bacteriologically. It is noteworthy that the pulse never rose above 90, though the infection was so serious and the temperature raised. Probably the gas was an odourless product of the growth of *B. perfringens*, and not ordinary air.

CHRONIC TYPES.

CASE XIII.—*Slow Development of Empyema by Infection with B. perfringens, though the Shell Fragment which Introduced the Sepsis was Aseptic in its Final Resting Place.*

Pte. M., Gordons. May 10th, 1915. Shell wound penetrating back of left chest at angle of scapula; fragment could be palpated deeply in second space in front below left costo-chondral junction. No haemoptysis.

Twenty first day: Fever rising to 103° for last week. Pulse 120, respirations 28. Tongue clean; not very ill. Explored at base behind; no collection of fluid found.

Thirty-sixth day: Fever still persisting, but at lower level and now swinging from 99° to 102°; pulse 94 to 100. Feels and looks well Heart displaced to the right, and evident physical signs of effusion at base. Explored: Offensive gas and pink purulent fluid with heavy infection of *B. perfringens*.

Thirty-seventh day: Resection. A little gas and much pus found between diaphragm and lung. The shell fragment was removed at the same time from the front of the chest, where it was found to be lying in a perfectly clean aseptic bed. The patient's temperature fell at once to normal, and he made a straightforward and rapid recovery, being able to join a reserve battalion in five months after his wound.

This is the fifth case quoted in this series (Cases VI, VIII, X, XII, and XIII) in which *B. perfringens* was identified as the chief infecting anaërobe. It will be noted that the clinical features were different in every case. One had jaundice; one was pallid and delirious; two showed the usual hectic flush and febrile aspect; and the fifth was a mild chronic suppuration.

CASE XIV.—*Apparently an Ultimate Extinction of an Infection which had Caused the Development of Foul Gas and Chronic Suppuration.*

October 31st, 1914. Penetrating shell wound posteriorly over the tenth right rib. Under the care of Captain Clementi-Smith, R.A.M.C.

Eleventh day: Persistent fever, 102° to 103°; pulse 120. Aspirated 30 oz.; no examination made.

Twenty-third day: Aspirated 15 oz.; no examination made.

Thirty-eighth day: Physical signs of pneumo-haemothorax. Aspirated 10 oz. brown purulent fluid and some offensive gas. Pus abundant, but no organisms found.

Forty-fifth day: Aspirated 30 oz. of same character as before. A few Gram-positive bacilli were found in the purulent débris, but they could not be grown.

Fifty-seventh day: Afebrile, but of pallid, wasted appearance. Sent to England. Rib resected shortly afterwards at home, and cavity drained. The patient then rapidly regained health, and the sinus closed in the seventh month after the wound.

GENERAL TREATMENT.

Diagnosis.

The chief need is for a greater readiness to suspect sepsis, and a prompt action in putting this suspicion to the test by exploratory puncture. Even a day's delay in order to watch the development of the case may in the most virulent types of infection mean that the patient is allowed to pass into a state of such gravity that surgical treatment is almost without hope.

If the needle has obtained an honest sample of the haemothorax—lung or liver blood can always be recognized by the fact that it clots massively in the syringe or test tube, whereas haemothorax fluid never does so—and if this fluid is found under the microscope to be sterile, then it is generally safe to wait and watch developments. It is *never* justifiable to resort at once to rib resection and drainage merely because the patient presents all the clinical appearances of severe sepsis. If the patient does not improve, a second exploration in a different place should be made on the following day. A later exploration is nearly always required if the fluid first withdrawn yields an unusually rich field of polymorphonuclear cells on centrifugalization, but is none the less sterile. Such an increase of polymorphs has again and again been noticed to be a premonitory feature in cases of delay in the dissemination of bacilli through a haemothorax.

An offensive odour in the sample withdrawn justifies surgical treatment at once without waiting for a bacteriological report.

In all infected cases, except those of a simple through-and-through wound, a skiagram should be taken, if the patient's condition will permit it, so as to localize any retained foreign body. For this purpose the patient should be lying down and not in the sitting posture that is needed for screening a haemo-pneumothorax.

Principles of Treatment.

The ideal treatment of an infected haemothorax would succeed in satisfying all the following conditions:

1. Removal of the gas and infected fluid from the pleural cavity.
2. Removal of the septic blood clot.
3. Extinction of the infecting organisms.
4. Removal of the foreign body.
5. Provision to induce rapid re-expansion of the collapsed lung, and to prevent secondary infection of the pleural cavity by other organisms that might be introduced by methods adopted to secure the first four requirements.

In practice this complete ideal has not been attained, and the surgical treatment of these cases still remains near the primitive level where it is perforce content merely to save life.

Many of these examples of anaërobe infection show a long latent period, during which the bacilli introduced with a shell fragment are seeking to establish their foothold and have not yet burst throughout the haemothorax. The organisms do not flourish in fresh blood or in contact with uninjured live tissues. Hence it would appear to be possible in some cases to open a wounded chest at once, wash out all the clot, remove the foreign body, and close the chest again, in the hope of eradicating the infection before it obtained the mastery over the resistant powers of the vital tissues. Major G. E. Gask has planned such a line of treatment, and already proved it to be practicable in certain selected cases. But the conditions of military surgery make it unlikely that this preventive method of treatment will be found to succeed in general, and therefore the problem to be dealt with, at the base hospitals at any rate, must be accepted as that of a fully established infection in a haemothorax.

Attempts have been made by us to avoid opening the pleural cavity, and to treat the infection by repeated aspirations combined with lavage by some antiseptic agent. This might appear to be a hopeful method, because many of the anaërobes tend to die down in body fluids. Oxygen was tried as an intrapleural injection, but with no good result. Eusol was also used for closed lavage (see Case VIII), and it was equally useless. Probably most of such attempts are foredoomed to failure, because they

cannot deal with the masses of septic clot lying in the pleural recesses. The latter have become foreign bodies just as much as is a shred of clothing or a fragment of metal; and all these, if septic, must be removed.

In a few cases the infection that is reported to be present by the bacteriologist is not a vigorous or extensive one, and the purulent reaction is slight. The body may overpower the organisms if it is aided by aspiration of the dead fluid and if the blood clot chances to have escaped infection. In such cases simple aspiration may suffice to cure.

We were particularly struck by the power of the pleura to dispose of infection, in an example of pulmonary actinomycosis which came under our observation. The left pleural cavity was widely infected, and it had to be emptied by aspiration on three occasions, the last evacuation amounting to nearly 80 oz. of thick pus, which contained abundant actinomyces, but no other organisms. The patient made a slow but complete recovery without drainage, and the chest ultimately showed no abnormal physical signs. French writers[1] have laid stress on the possibility of this simple method of treatment for infection of a haemothorax by cocci when the aspirations are commenced at an early date.

Each chest wound must be judged on its own merits, and in the milder forms delay in drainage is admissible, provided that the patient is continually watched for the development of toxic symptoms. But drainage is the rule for safety, and we regard it as an unavoidable necessity in the vast majority of cases because the clot is infected.

The pleural cavity must be opened, clots detached or washed away by very light manipulation, and the foreign body removed if it is accessible. After such cleansing it is conceivable that it might be possible in certain cases to douche the cavity with an antiseptic agent, and then close up the chest completely, trusting that the natural powers of defence of the body will combat what is left of the infection. But no satisfactory means of arriving at this result has yet been found, and for the present it still appears to be necessary to provide for continual drainage away of the suppurative fluids.

This drainage must be planned so as to empty the lowest recesses of the cavity. When a rib has been resected at too high a level, and a long tube is introduced in an upward direction, while the patient is kept propped up in bed, an offensive cesspool, with all manner of secondary infections added to it, is likely to be established in the bottom of the pleural cavity, and this will continue to poison the patient until it is properly emptied.

In cases of large empyemata, when the toxic features are not very marked, it is an advantage to employ airtight drainage, so as to avoid secondary infections and help in the re-expansion of the lung by suction upon it. The parietal pleura is sewn together tightly around the tube, and the muscles and skin are also sewn together in successive layers. This procedure adds at least fifteen minutes to the time taken for the operation, for it is not an easy matter to sew up the inelastic pleura. The free end of the tube may dip below the surface of a bottle of weak disinfectant fluid placed on the floor, so as to maintain a slight negative pressure after each cough. Or the tube may pass into a collecting flask for the pus, upon which suction is steadily maintained at a known pressure by an automatic aspirating bottle.

These methods are occasionally an advantage, and they add to the comfort of the patient for the first week until the sutures break down, because the dressing on the wound remains dry, and does not become a pus-soaked mass that requires frequent changing. The suction helps a little towards the expansion of the collapsed lung; but the respiratory movements of the patient will do far more in this direction if they are deliberately practised.

So soon as open drainage is resorted to, it should be the aim of the surgeon to get rid of the tube as early as possible. If sloughing clots have been removed there is little need to keep the tube in place for more than a few days. An offensive discharge requires daily lavage with eusol or some other antiseptic, such as carbolic acid combined with weak hydrogen peroxide, in order to dislodge clot if the cavity could not be emptied at the time of the operation. Any retained piece of metal should be removed if it is accessible. Those within the substance of the lung in septic cases may ulcerate their way to the surface without harm, but there is real risk of their opening up a vessel in this process, and causing death by secondary haemorrhage. We have, however, met with only three fatalities of this nature (cp. Case III) out of all the number of chest wounds that have been seen by us, which must aggregate well over a thousand, so that the danger is not a serious one in the first stages of recovery after such wounds. We have not enough experience to enable us to state whether the danger attendant upon searching in the presence of a septic haemothorax for a foreign body embedded in the lung will outweigh the advantage of avoiding a chance secondary haemorrhage by its early removal.

The Treatment Appropriate to Various Clinical Types.

1. *The Acute Pneumothorax Type.*—These patients are suffering from extreme mechanical disturbance of the thoracic contents by the accumulated gas, and they are so critically ill that they cannot tolerate much surgery. It is sufficient to insert a tube through an intercostal space in the axilla under a local anaesthetic, and then to complete the drainage by rib resection at the lowest possible place behind as soon as the patient has recovered a little. The prognosis is good.

2. *The Acute Septic Type.*—These cases are generally hopeless on account of the overwhelming effect of the poisons, and many of them are subsequently found to have been suffering from complicating wounds of abdominal viscera, which made their chances of recovery still more desperate. Rib resection may none the less succeed in saving life.

3. *The Gradual Pneumothorax Type.*—A preliminary aspiration may be made so as to expand the lung if the collection is very large. Sooner or later the pleural cavity must be opened and cleansed. In mild infections airtight drainage and suction may be employed with advantage, and in some cases (cp. Case IX) it may be possible to deal separately with a sterile collection by aspiration, and with a localized clot abscess by rib resection.

The points which determine immediate resection are the development of jaundice in the patient, or an abundant deposit of pus in the fluid withdrawn. The presence of only a few anaërobes and the absence of other organisms from the fluid may be allowed to justify a vigilant delay, for under these conditions the patient will not suffer if the fluid collection is kept small by repeated aspirations. But in our experience it has always been necessary in the long run to drain chests with purulent infections.

We have tried the method of drainage through an intercostal slit without introducing a tube, in the hope that it would facilitate the expansion of the lung. It was not generally satisfactory, and was little more than a safety valve allowing gas to blow off and prevent its accumulation under pressure.

4. *The Progressive Toxic Type.*—In the jaundiced or delirious forms of intoxication the pleural cavity should be explored without an hour's delay and opened as soon as infection has been found. It is most important to resect at the lowest rib that will give access to the collection. On account of the possibility that the diaphragm may be fixed up in a high position, the exploring syringe must always be used again in the operating theatre as a preliminary to rib resection in order to ascertain the lowest limit of the haemothorax, and the pleura should be incised carefully for fear of cutting through an adherent diaphragm.

The forms with simple fever admit of a little longer consideration, for these clinical features may be caused by many other conditions than that of infection of the haemothorax. But if contralateral pleurisy or pericarditis are detected, these signs should be regarded as presumptive evidence of a dangerous infection, and exploration should be followed as soon as possible by rib resection, if the supposition is proved to be true.

5. *The Chronic Type.*—These cases recover so smoothly after rib resection, that one regrets that it is not possible to leave all septic cases to pass into this chronic state before surgical interference.

PROGNOSIS.

Life can be saved in nearly all cases except those with complicating wounds of the abdomen, or with virulent and mixed infections. A dry tongue is indicative of the latter. So long as the tongue remains moist the patient ought to recover.

Death from sepsis practically never occurs after the end of the second week following the wound. There is no long drawn-out fight with an ultimate and inevitable surrender, such as may be seen at times when the abdomen, the brain, or shattered bones are infected. Out of the last fifteen cases of death among examples that we have seen of haemothorax infected by anaërobe bacilli, fourteen died simply from the sepsis. One, the case related as No. III, died from a late secondary haemorrhage from a deep lung abscess round a retained piece of shell. Pericarditis was proved to be present in eight of the other fourteen fatally septic cases. Jaundice was noticed in seven, of whom two died without pericarditis. There were no instances of death from purulent bronchitis in this series.

None the less purulent capillary bronchitis with thick greenish-yellow airless sputum is a dangerous complication; and it appears to develop with greater severity in infected cases that have been left for many days without drainage. It may be the exacerbation of a cold that was present before the man was wounded; and a history of exposure on the battlefield after the wound is often given by patients suffering from this complication. The bronchi of the uninjured lung are more extensively infected than those on the wounded side, where collapse and immobility tend to restrict the spread of infection along the air tubes. Autopsy reveals thick plugs of green pus rising up from the orifices of every cut bronchiole, and there is sometimes a bronchopneumonic spread of the infection into surrounding lung tissue.

So soon as this character of the sputum is recognized stimulating expectorant medicines should be given freely, for this condition demands a treatment contrary to that usually practised in order to lessen cough in chest wounds. Its presence requires that the haemothorax shall be aspirated or drained away as soon as possible, so as to throw more lung tissue into active respiration. There is no evidence that such treatment introduces further danger by extending the bronchial infection along tubes that were previously collapsed.

Fever that continues for more than a week after rib resection, if not due to purulent bronchitis, is usually caused by inadequate drainage of the empyema. The pleural cavity should be explored by the finger to ascertain whether pus is accumulating in any recess below the level of the drainage tube. It this is found to be the case, a piece should be resected from a lower rib to improve the drainage, or a large catheter should be inserted and suction applied to it by some apparatus, such as the Sprengel pump. Drainage is improved by keeping the patient recumbent in bed.

Sooner or later the lung expands fully in practically all the cases, and the sinus closes without the need for any elaborate surgery. We have learnt the after-histories in England of thirty of our cases, whose chests were drained for infection of a haemothorax, some for anaërobe infections, and others for streptococci, etc. The sinus became closed in the majority during the third or fourth month after the original wound, and some of the men were at once classified as fit for duty. In only eight of the cases was the sinus open as late as the sixth month. There was only one case of chronic empyema cavity in which at the fourth month a minor Estländer operation was performed for its obliteration; and there were two cases in which small operations were needed for the drainage of a loculated collection of pus.

SUMMARY.

1. Infection by anaërobic bacilli occurs in about 10 per cent. of all cases of haemothorax from gunshot wounds of the chest that are seen in base hospitals in France.

2. The infection leads to the development of malodorous gas which may occasionally be so abundant as to simulate a large air pneumo-haemothorax, while the toxic features of the infection for the time being remain in the background.

3. In the majority of cases the septic features are much more prominent than gas formation. The most serious of these features are jaundice, a rapid pulse (which may be the index of commencing pericarditis), and semi-delirious restlessness. Less dangerous is the febrile type with a brilliant hectic flush on the cheeks.

4. Diagnosis depends on exploratory puncture. In cases with the clinical aspect of sepsis it may be necessary to repeat the exploration on successive days, because it is a characteristic of anaërobe infection that the bacilli frequently fail to spread at once throughout the haemothorax, so that their presence is often missed at the first searching.

5. Life can be saved in at least four-fifths of the cases if the infected blood is promptly drained away. A day's delay in putting such treatment into force, when once the infection is well established, may mean death to the patient.

6. The clinical pictures caused by the sepsis vary widely in the individual cases of infection, but these differences cannot yet be correlated with the various forms of anaërobic bacilli that are proved to be present in each particular case.

REFERENCE.

[1] E. Foisy: *La pratique de la chirurgie de guerre*, Fascicule ii, 1916, p. 185.

A CASE OF SPIROCHAETOSIS ICTERO-HAEMORRHAGICA.

BY CAPTAIN R. RIMMER, R.A.M.C.,
M.O. i/c LABORATORY, No. — GENERAL HOSPITAL.

LITTLE evidence of epidemiological importance could be obtained from the patient whose case is here described. No previous case of jaundice had occurred on the boat, to his knowledge, and, since the boat does not call regularly at this port, no later information is available. Questioned as to the presence of rats, he was not able to state that they had been more noticeable than is usual on a ship.

A steward on H.M.T. ——, aged 27, complained of vomiting for four days, vague epigastric pain and tenderness, and headache. The tongue was coated, and his mental condition was not clear. His replies to questions as to onset and present condition were vague and rambling. The temperature was 99.8° and the pulse 100, with no special characters. There was no jaundice.

On the morning of December 1st, 1916, he was markedly jaundiced, and his mental aberration was more noticeable. There was no vomiting; his tongue was brown and very furred (centrally disposed). Temperature 97.8° and pulse 86 in the morning; temperature 98° and pulse 90 in the evening. A guinea-pig inoculated intraperitoneally with 2 c.cm. of blood on this day remained healthy for the ten days it was under observation, having no pyrexia, and increasing steadily in weight.

On December 2nd the symptoms were more marked, the patient being delirious and of a deep orange colour, which apparently varied in depth from one part of the day to another. Small cutaneous haemorrhages were present on the limbs and trunk. There was also a small amount of haemorrhage from the mucous membrane of the mouth. He had incontinence of urine and faeces. There was no gross change in the size of the liver. *Tache cérébrale* was present. Herpes was not present. The faeces showed no special characteristics. The urine contained albumin, bile, and casts, mostly granular, but no leucin or tyrosin. He did not complain of any irritation of the skin.

A guinea-pig inoculated intraperitonally with 2 c.cm. of urine showed fever (temperature 104°) on the sixth day, jaundice on the seventh day, and died with subnormal temperature and signs of collapse on the ninth day of observation. At the *post-mortem* examination haemorrhages of various sizes were found throughout the lung tissue on the right side; at the base was a considerable area of consolidation. The liver showed small patches (2 to 3 mm. in diameter) of a brick-red colour throughout its substance. Spirochaetes were present in the liver and blood, demonstrated by prolonged staining of smears with Giemsa, by silver nitrate, and Indian ink methods. In sections of the liver and kidney treated by Levaditi's method the organism was plentiful.

A second guinea-pig was inoculated with an emulsion of liver from the first animal, and the disease ran a very similar course. On the tenth day it was markedly jaundiced (with bile in the urine), and very dull, with loss of appetite, and a subnormal temperature. It was killed on this day. The *post-mortem* examination showed the usual haemorrhage into the lungs, and the liver was enlarged, very congested, and soft in consistency. The spirochaete was present in the liver and blood as before.

A third guinea-pig, inoculated from the second, died on the eighth day, and the liver showed the same bright red areas as were observed in that of the first animal.

The patient, on the fifth day after admission (probably the ninth day of the disease), showed marked improvement, the tongue cleaning, the degree of jaundice lessening, and his mental condition becoming normal, with return of control over both sphincters. No treatment was attempted. He took nourishment well throughout, the bowels moved freely, and the pulse was always good in quality. He subsequently developed some bronchitis, and had an evening temperature for some days

before evacuation. His condition when evacuated was quite satisfactory. He was still jaundiced, wasted, and anaemic. He stated that he felt quite well, and was apparently convalescing rapidly. When last heard from, on December 27th, 1916, he was up and expecting to be discharged from hospital in a few days.

CEREBRO-SPINAL MENINGITIS.

Preliminary Note on Certain Pathological Findings and their Bearing on Treatment.

By

W. E. CARNEGIE DICKSON, M.D., B.Sc., F.R.C.P.E.,

Pathologist to Fulham Military Hospital, etc.

Over a year ago the results of *post-mortem* examinations on our fatal cases of cerebro-spinal meningitis gradually impressed upon my colleague, Captain A. Charles E. Gray, R.A.M.C., and myself the importance not merely of the mechanical blocking of the outflow of cerebro-spinal fluid from the cerebral ventricles by fibrino-purulent exudate in the region of the foramen of Magendie, but also of the actual, and in many cases widespread, involvement of the ventricles themselves in the inflammatory process. In practically every fatal case so examined the cerebro-spinal fluid in the whole chain of ventricles was found to be turbid—often considerably more so than the fluid outside the brain and in the spinal canal. Flakes of fibrino-purulent material were often present in the fourth and lateral ventricles, even in cases where little dilatation had yet occurred, whilst in cases in which hydrocephalus was supervening the inflammatory process was frequently more marked than on the external meninges. Microscopical examination of the fluid and fibrino-purulent exudate from the various ventricles usually showed large numbers of meningococci, sometimes in such numbers as to suggest the appearance of a "culture" of the organism. In many of these cases meningococci had become scanty or had disappeared from the fluid obtained by lumbar puncture during the clinical course of the case, and the important bearing of this finding upon treatment was early impressed upon us. After careful discussion with us, Major Lee, surgeon to the hospital, a year ago performed ventricular puncture upon several of the most serious cases, with a view to relieving the ventricular condition, and giving the patient a last chance of recovery. In the ventricular fluid so obtained meningococci were found in large numbers.

A second point of interest in connexion with the blocking of the outflow of fluid from the ventricles is that congestion and swelling of the brain substance, as well as blocking of the foramina in the roof of the fourth ventricle, may play a part in its production by forcing down the cerebellum into the foramen magnum around and in close apposition to the medulla, so that the foramen is sometimes blocked up as by a cork. The more the swelling of the brain increases, and with hydrocephalus also supervening, the more firmly is this "cork" forced down into the foramen, and the less possibility is there of relieving the pressure by lumbar puncture or any form of spinal drainage. In such cases I would strongly urge the advisability of ventricular puncture and drainage, as well as the introduction of antimeningococcal serum directly into the lateral ventricle, a procedure which Major Lee contemplates carrying out on a more extensive scale than heretofore. This should be done not merely in moribund cases as a last resort, but be thought of in cases in which, often after a preliminary improvement, cerebral symptoms increase. In such cases the examination of the fluid obtained by lumbar puncture alone may lead to an erroneous impression of improvement. Inflammatory cells may become less numerous and more mononuclear in character, meningococci may disappear, and yet the cases do not improve in a corresponding degree. *Post-mortem* examination may show in such cases a "clean" spinal cord but the ventricular infection above described. Nor need there be actual complete blocking by exudate of the foramina in the roof of the fourth ventricle to produce this result, though of course it is a common factor. Captain Gray has occasionally observed that relief of the cerebral pressure, probably by amelioration of the condition and subsidence of the swelling of the brain tissue, may allow of fluid being drawn off by lumbar puncture where previously little fluid could be obtained—possibly by releasing the cerebellar plugging of the foramen magnum. It appears possible that in certain cases of this nature, while the pressure within the skull remains high, drawing off fluid from below may actually aggravate the condition by pulling the cerebellum still further down against the medulla.

Another point which we investigated over a year ago was the facility with which fluid introduced by lumbar puncture gained access to the meninges and ventricles. In several cases of meningitis and also in non-meningitic cases, as soon after death as possible, we injected a strong solution of methylene-blue by lumbar puncture, under conditions as regards amount, pressure and position as closely as possible approximating to the clinical injection of anti-meningococcal serum. We found that, in non-meningitic cases and in meningitic cases without blocking of the openings in the epithelial and pial roof of the fourth ventricle, the 30 c.cm. of fluid injected at 15 in. of water pressure ran readily up the spinal canal and over the surface of the brain to the vertex and inner aspects of the cerebral hemispheres, and also into the chain of cerebral ventricles, reaching to all the tips of the horns of the lateral ventricles. On the other hand, where the foramina were blocked, the methylene-blue either penetrated only very slightly into the fourth ventricle or not at all, even though the surface of the brain was reached by the fluid. In one case, where there was extensive basal fibrino-purulent exudate and "corking" of the foramen magnum, scarcely any staining of the cerebellar and cerebral meninges occurred.

In a large number of cases examined *post mortem*, extensive softening of the spinal cord was found—most frequently in the upper dorsal, or upper dorsal and lower cervical region.

Several cases of the "serum reaction" which occurs in the cerebro-spinal fluid in non-meningococcal cases (tuberculous and syphilitic) in which antimeningococcal serum had been administered have come under my notice. These were punctured outside the hospital, and the serum administered before admission. On the day following such injection of serum the cerebro-spinal fluid withdrawn by lumbar puncture was turbid (in the tuberculous cases markedly so), and on microscopical examination was indistinguishable cytologically from the exudate of cerebro spinal meningitis, a well marked polymorphonuclear reaction occurring early, followed by progressive increase of mononuclears and phagocytic phenomena, etc., completely masking the real pathological condition. It was usually a matter of difficulty to obtain a sample of the first lumbar puncture fluid removed outside, but when this was possible the comparison was interesting and instructive, and often cleared up the doubtful diagnosis. The serum reaction of the cerebro-spinal fluid in meningococcal cases is also very interesting and important, but is beyond the scope of the present note, and I merely mention one of the most outstanding phenomena—namely, the bringing out into the fluid of a fresh "crop" of cells, mainly polymorphs, so that one can distinguish what I have termed double or even triple "broods" of cells—one fresh and undegenerated, staining well, another degenerated and undergoing "phagolysis" in various ways, and perhaps the third almost disintegrated—these crops corresponding to the reactions following the various injections of serum. This reaction appears to vary somewhat with the special brand of serum used.

In addition to the injection of antimeningococcal serum, washing out with saline, etc., we have on various occasions experimented with the injection of sodium citrate with a view to the prevention of the formation of fibrin, and of eusol as an antiseptic, but our results have not so far been sufficiently encouraging to allow of our publishing details. We hope to try the effect of flavine injections as soon as a sample of that substance is at our disposal.

Note.—Since the above was written Captain Gray has injected several cases with flavine. The results will be published later.

On March 7th the American Codes Committee threw out bills intended to legalize the dissemination of birth control literature throughout New York State.

A CASE OF TRAUMATIC PNEUMONIA.

BY

JOSEPH GEOGHEGAN, M.B., CH.B.EDIN.,

GOVERNMENT MEDICAL OFFICER, TURKS ISLANDS; LATE DISTRICT COMMISSIONER AND GOVERNMENT MEDICAL OFFICER, CAICOS ISLANDS; HOUSE-SURGEON, GENERAL HOSPITAL, YARMOUTH, ETC.

INVOLVEMENT of the pleura as a result of injury of the chest wall, either by direct violence or by the indirect effect of a force, such as a strain, probably happens more often than is observed. The small area of the probable lesion and the slight constitutional disturbance minimize the importance of such a pathological process, but perhaps explain the occurrence of isolated fibrous bands between the pleurae, as seen in the *post-mortem* room. Involvement of the lung, as contusional or traumatic pneumonia, though well known to happen, is still less frequently noted. Parkes Weber[1] refers to haemorrhagic infiltration in this condition, and interesting speculations may be introduced as to lesions of small vessels, the latency of the organism, the frequency of the common pneumococcus in the mouth, and the atypical features possible.

The following notes on a case lately seen present certain well-marked points: (1) The definite injury, associated at the time, it may be, with a slight attack of influenza. (2) The acute pain, but total absence of any pleuritic signs, unless, as has been suggested, the minute crepitations first heard are not moist sibili, but a fine pleural friction. (3) The irregularities noted; the curiously low temperature and the fall by lysis, the slowness of the pulse, the area of lung involved, and the lateness of the sputum.

R. G., aged 27, a strongly-built coloured labourer, received on March 26th, 1916, a heavy fall while engaged in some horseplay. There is a trick practised in irregular combat which consists of suddenly catching hold of the loose lower front ends of the opponent's trousers and throwing him headlong. Done with a deft celerity, it results in a heavy fall. R. G. was treated in this fashion and suffered afterwards from some pain in the right side, but not to any marked extent. He further states that at the time he was troubled with a "cough and cold," probably an attack of mild influenza which had been epidemic.

Four days later, on March 30th, between 10 and 11 a.m., he was suddenly seized with severe pain in the right side just below and outside the nipple, and came first under my hands on the afternoon of the same day. Breathing was rather hurried, short, and restrained; the chest wall was rather rigid on the affected side; no abnormality could be detected on physical examination, the temperature was normal, and the pulse 78. Pleuritic possibility was kept in mind in prescribing the treatment.

Nothing more was heard of him for four days, when, on April 3rd, he returned obviously ill. He stated that he had had great pain in the right side at the same spot, with a short hacking cough, for the two preceding days, and had felt very ill. There was no history of rigor or vomiting. Respirations were 32, short and restrained; there was rigidity of the whole chest and inability to take a deep breath. Vocal resonance and fremitus appeared somewhat increased on the right side posteriorly. No change was noted in front, but on the back (right side) some impairment of note, the breath sounds having a blowing character over the same area with some fine crepitations at the end of inspiration and lengthened expiration in front. There were no friction sounds. The second sound of the heart was accentuated, with a tendency to reduplication of the first in the aortic region. There was no enlargement of the spleen, but some liver tenderness. Temperature 100.2°, pulse 78.

Next day an area of dullness was noted on the right side posteriorly extending along the base of the lung, the upper limit (rather indefinite this day but confirmed the next) starting from close to the mid-axillary line, rising to the scapular margin at the sixth rib, and thence passing transversely across the back. Respiratory sounds over this area were approximately equal in length, more particularly at the upper edge of the dullness. There was a short, dry, painful, and infrequent cough. There was no herpes on the lips at any time. There was yellow discoloration of the conjunctivae. Urine acid, specific gravity 1026, no sugar, faint trace of albumin, deeply stained with bile.

On April 5th the temperature was 101.2°, the pulse 98, and the respirations about 30. The following day the temperature fell to 100.3° and the pulse to 84. Some sputum now appeared, frothy and white, with no viscidity or green or rusty discoloration, in quantity small, and rather similar to the bronchitic type. On April 7th the temperature had risen to 102.8°, pulse 100; jaundice less and albumin absent from urine. On the 8th the temperature was 101.8°, pulse 88, and respirations 32; on the 9th, temperature 100.5°, pulse, 100, respirations 30. The next day the temperature had fallen to 99.3° and the pulse was 84; all over the affected area were crepitations of various degrees; dullness, fremitus and resonance were diminished, but there were still blowing bronchial sounds in the area.

On April 11th the temperature was 97.4°, pulse 78, and respirations 26. On this day a definite green colour suddenly appeared in the sputum, which was very viscid, almost nummular. The breathing was free and there was a frequent soft cough. There was a distinct movement of the chest wall. The subsequent progress to recovery was uneventful.

The patient's illness was treated in a small wooden hut about 20 ft. by 12 ft., with such nursing as his friends and relatives could give him. The temperatures, etc., recorded are those of the evening.

The ordinary treatment was given, with the use of calcium chloride, creosote, and potassium iodide, in suitable doses.

Little of the usual anxiety, as can be seen by the brief notes given, was aroused, owing to the full pulse, the generally easy, though nervous look, and the absence of the more serious signs or symptoms.

REFERENCE.

[1] Parkes Weber, quoted in the *Medical Annual*, 1911, p. 517.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

RECURRENCE OR REDEPOSIT OF CANCER?

MR. TILLEY'S question in the JOURNAL of March 31st (p. 424) sent me to my notes on the medical aspects of carcinoma of the breast, two series of cases of which I have already published (*American Medicine*, 1901, and BRITISH MEDICAL JOURNAL, 1906, i). The following statements seem warranted:

There is no time-limit to the primary growth, which may persist from ten, fifteen, or twenty years before metatases occur; or the patient may die of some other malady.

Secondary growths, even multiple, may become quiescent or even disappear (Cases v and vi).

A primary mass with metastases may remain stationary for years.

Years after removal there may be local recurrence, as illustrated by Mr. Tilley's cases.

Years after removal of the original growth there may be extensive internal (without local) recurrence.

Though no time limit exists for recurrence the modern complete operation has been followed by good health for periods long enough to justify the use of the word "cure." Is there an instance of return twenty years after the complete operation?

Oxford. WILLIAM OSLER.

BRILLIANT GREEN AS AN EPITHELIAL STIMULANT.

THE minor ailments of the soldier may not in themselves be dangerous either to life or to limb, but are sufficient to incapacitate a man, rendering him useless as a fighting force, a source, may be, of infection to his friends and an encumbrance to a medical unit where space and time are of paramount importance.

A casualty clearing station affords a unique opportunity of meeting these cases—impetigo, indolent ulcers of various kinds but principally of traumatic origin, superficial shell wounds involving only the skin, raw unhealthy areas due to the bursting or unscientific removal of the skin forming a blister, and such like. Apart from actual wounds caused by the enemy, cases of this description comprise from 40 to 50 per cent. of the total walking cases

treated by us. Realizing the enormous military importance of returning these men to duty in as short a time as possible, we have for some time been using various treatments and striving, if possible, to pick out that which was best.

In our opinion, the best results obtained were from the daily application of an ointment containing 1 to 2 per cent. brilliant green. Although the ointment appears to be non-toxic in any percentage, we have found that, if used in greater concentration than 5 per cent., it produces severe smarting, which, although it ultimately passes off, may occasion discomfort for as long as three hours.

The ointment is non-irritating, antiseptic, and possesses powerful auxetic properties. After one or two applications the diminution of the itching and the rate of growth of the edges of the wound are very striking and so noticeable as to attract the patient's own attention. A few days later on looking at the ulcer it will be noticed that an appreciable change has taken place. The slightly raised margins of the wound or ulcer are seen to be composed of new, healthy, pink, firm-growing epithelium, the granulation tissue forming the base of the ulcer is bright red, firm, and non-oedematous, and the discharge has diminished considerably in amount. In fact the ulcer is healing.

Some slight difficulty was experienced in making the ointment for the first time. The following procedure was, however, adopted with success. Brilliant green (8.75 gr.) was dissolved in rectified spirit (15 minims) and then incorporated with 2 oz. of soft paraffin, which experience has shown us to be the most serviceable base, thereby making a 1 per cent. ointment. The method of application is simple—all crusts or scabs are removed before the ointment is applied, smeared on lint cut so as to fit the raw surface accurately. If spread indiscriminately over the adjoining skin it leaves a stain, bright green in colour, which is rather difficult to remove, though this can be done by the use of soap and water, but a little patience is required.

We have used brilliant green ointment on a considerable number of cases which have resisted treatment in some instances for as long as fourteen days, and it has been with pleasure that we were able to discharge them as fit for duty in a remarkably short time. The rapidity of healing can only be attributed to its use, as, beyond its daily application and good food, no other treatment was used.

R. W. HODGSON-JONES,
Captain R.A.M.C.(T.C.).
Casualty Clearing Station, B.E.F.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

GLOUCESTERSHIRE BRANCH.

AT the monthly meeting of the Gloucestershire Branch of the British Medical Association, held at the General Hospital, Cheltenham, on March 22nd, when Mr. HOWARD MARSHALL, President, was in the chair, the following cases and specimens were shown:

Mr. HOWELL: (1) Myeloma of the upper end of the humerus, with heterogeneous graft. (2) Sarcoma of orbit treated by radium.

Dr. HEBBLETHWAITE: (1) Cerebro-spinal fever after eighteen lumbar punctures. (2) Locomotor ataxia.

Mr. BRAINE-HARTNELL: (1) Key 2¼ in. long removed from the transverse colon of a child aged 2½ years. (2) Solid tumour of ovary. (3) Various splints. (4) Child with fractured femur and large spina bifida. (5) Epithelioma of tongue following gumma.

Dr. H. POWELL: Man with large tumour on left side of abdomen (for diagnosis).

Mr. PIKE: (1) Post-cricoid epithelioma of larynx. (2) Large maxillary antrum polypus.

Mr. HOLMES: (1) Extirpation of penis for epithelioma. (2) Enterectomy for strangulated gangrenous femoral hernia in a woman of 86; recovery.

Dr. AFFLECK: Mediastinal neoplasm in a man of 35 treated by mercury succinate intramuscularly and organic iodine, with steady improvement.

ON December 28th the Havana Society of Clinical Studies appointed a committee, consisting of Drs. Aristides Agramonte, Juan Santos Fernandez, and Francisco Solano Ramos, to take steps for the formation of a league to carry on a campaign against venereal diseases, and the causes which directly or indirectly favour the dissemination of such affections in Cuba.

Reports of Societies.

UNDIAGNOSED CANCER OF THE CERVIX.

AT a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine on March 1st Dr. HERBERT SPENCER read a paper on two cases of supravaginal amputation for sarcoma mistaken for myoma. The patients recovered, but the disease recurred. The operations were performed seventeen and twenty years ago. These two mistakes in diagnosis had led him to study the literature and the relative advantages of amputation and total hysterectomy, and to decide very strongly in favour of the total operation. His two cases occurred amongst thirty cases of supravaginal amputation for "myoma" (that is, in 6.6 per cent.). Sarcoma, though rare, was much commoner than was thought by those who did not harden and examine all tumours removed. He had met with over a dozen other cases.

Dr. Herbert Spencer also read a paper on four cases of undiagnosed cancer of the cervix in 200 total hysterectomies for myoma. All were instances of squamous carcinoma; two were very early cases and high up in the cervical canal; the others more extensive, but out of reach on account of the presence of pelvic tumours (in one a cervical myoma weighing 10 lb.). The first (an early case) died of heart disease within a year of the operation; the second remained well after six years; the third remained well for five years, but died of recurrence after nearly six years; the fourth recurred within a few months. He appealed to the advocates of supravaginal amputation for a record of 100 or 200 cases followed up *and examined* for five years after operation. He had not performed the operation for the last sixteen years, and the evidence now advanced was offered as showing two points of superiority in the total operation. It had other points of superiority which would be dealt with in subsequent papers.

The President, Dr. G. F. BLACKER, said that the question whether total hysterectomy or subtotal hysterectomy was the best operation for the removal of fibromyomata of the uterus was one of great importance. With sarcomatous degeneration of such a tumour, however, the question was not so important as it was when a carcinoma developed in a fibroid uterus. The specimen exhibited showed that a patient might remain free from recurrence, even when the body of the uterus had been removed and the cervix left, in the case of a sarcoma mistaken for a myoma. The cases recorded in the literature showed, he believed, that the chances of recurrence were equally great whether the cervix was retained or not. He asked whether the recurrence had involved the cervix in the two cases recorded by Dr. Spencer.

Dr. RUSSELL ANDREWS did not think that Dr. Spencer had made out a strong case for panhysterectomy for fibroids. Could he bring forward any evidence that sarcoma was likely to recur in the cervix after subtotal hysterectomy? Two of the four cases of carcinoma were hardly worth inclusion, as in one the cervix could not be felt and in the other Dr. Spencer had been suspicious of the cervix. Dr. Andrews had at one time performed panhysterectomy as a routine operation for fibroids, but for the last ten years had removed the whole cervix only in cases in which laceration and eversion of the cervix made it probable that there would be persistent discharge if the whole cervix was not removed. His practice was to scoop out most of the cervix, and in doing this he had only once found unexpected carcinoma, although he had removed many uteri which contained both fibroids and carcinoma. During the last eight years 761 hysterectomies for fibroids, chiefly subtotal, had been performed at the London Hospital. Dr. Andrews and the late Dr. Maxwell had for many years been on the look-out for carcinoma occurring in a cervix that had been left behind, but no such case had been seen at the London Hospital. Dr. Andrews had seen very many patients who came to the London Hospital to seek advice for ailments, some gynaecological, and some having no connexion with gynaecology, after subtotal hysterectomy for fibroids, but had never seen carcinoma of the cervix among any of them.

Dr. T. W. EDEN said that Dr. Spencer seemed to contend that the cervix should be removed because it might at the

time be the seat of undiscovered cancer, or alternatively that it might later become cancerous. But two of Dr. Spencer's cases, although in a very early stage of the disease, died of recurrence, and it could not be doubted that an extended hysterectomy (Wertheim) would have given them a better chance. To be consistent, Dr. Spencer should advocate Wertheim's operation instead of panhysterectomy. Again, did Dr. Spencer conserve the ovaries in operating for fibroids? These organs also sometimes became the seat of primary cancer. It was very difficult to see at what point these precautionary measures should stop.

Dr. J. D. MALCOLM said that for many years he had removed the whole uterus in operating for fibromyoma, because in two cases he had seen reason to attribute septic trouble to a spread of infection from the cervix uteri. Recently he had on two occasions left the cervix. In one case the removal would have been unusually difficult, and the patient's condition was so serious that time was of importance. Death was due to gangrene of the cervix. In one case of irremovable cancer of the cervix uteri the uterine body, as far as the evidence could be trusted, had been removed for fibromyoma.

Mr. T. G. STEVENS said that in his opinion Dr. Spencer's first two cases were not cases of cancer of the cervix at all. The appearances seen in the microscope sections constituted a proliferation of the vaginal epithelium around the openings of glands, and constantly occurred in erosions. They were not of the nature of a carcinoma, and never gave rise to a carcinoma.

Dr. HERBERT SPENCER, in reply, said that he had dealt with two questions only—the frequency with which sarcoma was mistaken for myoma and undiagnosed cancer occurred in operating for myoma, as points in determining the partial or complete operation. He was unable to say whether in the case he had reported recurrence took place in the cervix. In one the vagina was full of growth, which probably affected the cervix; in the other there were numerous metastases, some in the pelvis; but, as no *post-mortem* examination was made, it was not possible to say with certainty whether the cervix was involved in these cases. He could not accept the statement that uterine sarcoma did not recur in the cervix; there were comparatively numerous instances on record. Large figures did not carry weight unless they were based on thorough examination, and Kelly and Cullen's 1,400 cases of myoma were admittedly not thoroughly examined in the early years. They gave seventeen cases of undoubted sarcoma and seventeen suspicious cases. No one could deny that recurrence took place after the partial operation. Total hysterectomy would not, of course, always cure a case of myoma complicated with cancer. The important question was: Which was the better operation for such a case? He did not agree with Dr. Eden that the total operation involved more risk, but that was not the subject of his present communications.

OPERATIVE TREATMENT OF FIXED BACKWARD DISPLACEMENT OF THE UTERUS.

AT a meeting of the Section of Obstetrics of the Royal Academy of Medicine in Ireland on March 2nd Dr. ALFRED SMITH said that he found the behaviour of the uterus in operations for fixed backward displacement varied in different cases after the separation of the adhesions. In some the uterus came easily up to the abdominal wall, showing a certain amount of relaxation of its supports; in others some considerable degree of force was necessary to draw it up into position. He divided his cases into two groups—(*a*) the uterus with relaxed supports, (*b*) the uterus with unrelaxed supports. The uterus with relaxed supports must be suspended or fixed. On freeing uteri with unrelaxed supports three types were met with: (1) where the uterus righted itself automatically; (2) where manual replacement was necessary; (3) where, owing to a thickened and shortened utero-sacral ligament, the uterus could not be brought into the normal position of anteflexion. Types (1) and (2) should neither be suspended nor fixed, as they had little tendency to fall back. With type (3) he freed the uterus from its entanglements, straightened out the tubes, released the ovaries, and left the case to nature. He urged the importance of determining the limitations of suspension or fixation, and of finding the principle by which gynaecologists should be governed in their treatment of fixed backward displacement.

Dr. HASTINGS TWEEDY said that he too had found great difficulty in dealing with the class of case described by Professor Smith. They usually showed a shallow pouch of Douglas and very hard and unyielding sacro-uterine ligaments. The condition arose from a previous perimetritis, and affected the structures included between the sacro-uterine folds. He was in the habit of cutting these folds down to their basement connective tissue. In this way the uterus was freed without injuring the uterine support, for the uterus owed its entire stability to the utero-peritoneal connective tissue lying at the bases of the so-called ligaments. The fibrous bands were intimately connected with the uterine muscles, and formed tendons to them.

The PRESIDENT said that the subject owed its importance to the frequency of its occurrence amongst the serious sequelae of parturition, the impairment of general health which often attended it, and the partial success which was all that sometimes followed treatment of it. Dr. Smith's classification of such cases was useful and practical, calculated to aid in selecting the treatment best suited to each case.

Dr. BETHEL SOLOMONS thought that in all cases of fixed backward displacement treated by operation the uterus should be suspended in the manner suitable to the case. He considered that the mere loosening of adhesions, as suggested by Dr. Smith, was not enough to bring about a permanent cure. Where there was a tendency for utero-sacral ligaments to exert tension on the uterus which was suspended, tamponnade, by means of medicated vaginal plugs, would cure this inflammatory condition. He deemed it advisable to curette the uterus in addition to correcting the malposition.

The President of the Section, Dr. GIBBON FITZGIBBON, said that the classification which had been made was very necessary in the treatment of cases. He had adopted the method of suspension of the uterus to the abdominal wall for some time, but came to the conclusion that it was unsatisfactory to bring the fundus forward to a fixed degree in all cases, and now performed a modified Gilliam operation, as thus the fundus could be brought forward sufficiently to prevent retrogression without putting undue tension on those uteri which would not come into complete anteversion. He also considered it most essential when the uterus was brought forward to see that the appendages did not fall back again, as they often had loose ligaments. The Gilliam operation had the advantage that it took up some of this slack of the broad ligaments, but if not sufficient the ovary should be fixed to the top of the broad ligament.

Reviews.

MORBID ANXIETY.

AN elaborate analysis of anxiety in health and disease has been written by Drs. DEVAUX and LOGRE, and has been furnished with a preface and introduction by their teacher, Dr. DUPRÉ.[1] The book is for the most part clinical, and begins with a discussion of what may be described as the anxious temperament—the temperament, that is, which is exhibited by the fussy and meticulous described as old women of both sexes. Sufferers from the anxious temperament must be distinguished from neurasthenics, melancholics, and the obsessed; in the same way anxiety must be distinguished from boredom, depression, despair, and other kindred solaces of the pessimist. The occurrence of anxiety in the different forms of insanity is described in detail. The treatment of anxiety should be based on its etiology; in many forms of psychosis it will be relieved by warm baths and by lumbar puncture, while in others rest, isolation, psychotherapy, sedative drugs, and restraint will be indicated. A special chapter at the end of the volume deals with anxiety as manifested by those exposed to the dangers of war. The

[1] *Les Anxieux.* Étude Clinique par les Docteurs Devaux et Logre. Préface du Dr. Dupré. Études de Psychologie Morbide, publiées sous la direction du Dr. Dupré. Paris: Masson et Cie. 1917. (Demy 8vo, pp. 316. Fr.4.50.)

well-balanced soldier is not unduly anxious on the field of battle. But it is quite otherwise with those of anxious constitution, who are unduly emotional; here the authors define the character of the "brave coward" or pseudo-poltroon, whose anxiety makes him useless except far behind the lines, although it is not the dangers of the trenches that make him useless as a combatant. The views of these authors are well expressed and form an interesting contrast in many ways to those put forward by Dr. Bergonzoli, whose essay on the subject of *Anxiety in Mental Diseases* was reviewed in the BRITISH MEDICAL JOURNAL of January 27th last (p. 122).

WELFARE WORKERS.

"WELFARE work consists of voluntary efforts on the part of employers to improve, within the existing industrial system, the conditions of employment in their own factories." So, in the opening pages of her book on *Welfare Work*,[2] Miss E. D. PROUD defines a movement only quite recently discovered by the general press, but which, already firmly established in our midst and dignified by Government sanction and adoption, is making rapid strides. Miss Proud notes in her preface that since the completion of her volume the largest employer in the land—the Ministry of Munitions—has established a welfare department. Several of the universities have arranged special courses of study for the training of the increasing number of candidates of both sexes for what may fairly be described as this new profession. Miss Proud, whose book enjoys the honour of a commendatory letter from the present Prime Minister—then Minister of Munitions—has qualified for her task by "many years of patient inquiry and research into the conditions of welfare work as carried out in the factories of the Australian Commonwealth and of Great Britain." Of the influence of the war in stimulating endeavours along this line Mr. Lloyd George remarks that "it is a strange irony, but no small compensation, that the making of weapons of destruction should afford the occasion to humanize industry. Yet such is the case. Old prejudices have vanished, new ideas are abroad; employers and workers, the public and the State, are all favourable to new methods. The opportunity must not be allowed to slip."

The duties of welfare workers have a twofold but not necessarily conflicting aspect; on the one hand, as representatives of the employer they have to suggest improvements in the conditions of work, to initiate social work of any promising kind, and to compensate by their interest in the employees for the impersonality of the relation between the modern firm and its workers; while as representatives of these workers it is their business to keep in personal touch with them, to gain their confidence, to gauge and voice their grievances; to help them in the organization of clubs or classes, and to be accessible in all matters requiring sympathy or advice. An important fact emphasized by Miss Proud is the remunerative tendency of welfare work; work done under the best possible conditions pays better than work done under bad ones. And this fact that "it pays," together with a traditional dislike of anything suggestive of patronage or paternalism, has in some instances led the workers to look askance upon the efforts of genuinely philanthropic employers. Many interesting problems in social psychology are set by the advent of welfare work, and these and all other aspects of her important subject are ably dealt with by Miss Proud in what, we agree with the Prime Minister, is likely to become the standard work upon it.

PHOTOGRAPHY IN COLOUR.

PHOTOGRAPHY in colours has nowadays developed so far as to be the hobby of countless amateurs as well as a sound business proposition. If he does not own it already, the amateur colour-photographer will find the third edition of Dr. G. L. JOHNSON'S book[3] on the subject a first-rate guide to the science, technique, and art of colour photography, with chapters on kinematography, by means of coloured lights and other side issues. The book has been planned and executed by the author in a thoroughly scientific spirit. The first chapter gives a general account of the physics of light and colour, the second contains a sketch of the history of colour-photography, and the third is devoted to the subject of the sensation of colour. Here Dr. Johnson inserts a most interesting coloured plate showing the colours of the spectrum as seen by each eye of a patient "suffering from a form of creeping paralysis, which gradually affected the limbs of the left side," and was associated with gradual loss of colour vision in the left eye. The plate shows the spectrum seen by the patient's right eye as normal; that seen by the left eye is a grey monochrome. The patient was a good water-colour painter, and made the drawings of these spectrums himself. Next follow chapters on photography in colours, with special attention to the practical working of single colour-screen plates, of which there are many makes on the market. Subsequent chapters contain accounts of three-plate and two-plate colour photography and colour printing; there is also a discussion of colour photo-micrography, and here the author acknowledges the help he has received from Mr. Walter Severn of Capetown.

Comparing the latest edition of Dr. Johnson's book with earlier manuals of colour-photography, with C. Ruckert's *La Photographie des Couleurs*, published in the year 1900, for example, one is struck with the great advances that have been made in both the science and the practice of the art during the intervening years. Dr. Johnson writes clearly, and it is obvious that he has a great knowledge of his subject. The book is well illustrated, and it may be cordially recommended to the attention of all photographers, whether professionals or amateurs, who feel inclined to take up a new and entrancing branch of their art or hobby.

NOTES ON BOOKS.

THE sixth edition of Dr. LEFTWICH'S well-known *Index of Symptoms*[4] is an improved exemplar of the fifth edition, which received notice in the BRITISH MEDICAL JOURNAL of July 24th, 1915, p. 140. The new edition has been brought up to date generally, and has been amplified by the addition of two new sections that should render it more self-contained than it was. The first of these additions consists of brief descriptions of some seventy more or less rare diseases unfamiliar to the general practitioner. The second is a most serviceable list of eponymous signs. The book is purely a book of reference, and it should be in the hands of all senior students of medicine and medical practitioners. It will be found a very present help in trouble in those cases—unfortunately so frequent—in which a diagnosis is not made for lack of no more than a little clear thinking.

Domestic Economy[5] is a textbook for teachers and students in training to be housewives. The first volume is devoted to the theory, the second to the practice and teaching of housewifery; the housewife may be defined as one who turns a house into a home. The first volume contains chapters on such subjects as bacteria, fresh air, clean water, foods, and cooking. In the second, foods receive further extensive consideration, and one is reminded of the old lady's sage advice to the bride, "Feed the brute." There is also a long and sound chapter on practical housekeeping. These volumes contain much valuable information, and should be of great service to intelligent persons.

Hints for Hospital Orderlies, by Dr. N. C. FLETCHER,[6] is a well written booklet for the direction of those who are called to do orderly service in military hospitals. The first two chapters are introductory and general; the next three deal with the orderly's duties towards the ward, the patients, and his own health; the last chapter gives briefly the details of orderly duties.

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[2] *Welfare Work.* By E. Dorothea Proud, B.A.Adel. With a Foreword by the Right Hon. D. Lloyd George, P.C., M.P. London: G. Bell and Sons, Ltd. 1916. (Demy 8vo, pp. 383. 7s. 6d. net.)

[3] *Photography in Colours.* By G. L. Johnson, M.D., F.R.C.S. Third revised edition. London: G. Routledge and Sons, Ltd. New York: E. P. Dutton and Co. 1916. (Cr. 8vo, pp. 316; 14 plates. 4s. 6d. net.)

[4] *An Index of Symptoms, with Diagnostic Methods.* By R. W. Leftwich, M.D. Sixth edition. London: Smith, Elder and Co. 1917. (Cr. 8vo, pp. 567; 14 figures. 10s. 6d. net.)

[5] *Domestic Economy: A Textbook for Teachers and Students.* Part I. *Theory*, by Marion G. Binder. Part II. *The Practice and Teaching of Domestic Economy*, by Florence Baddeley. Cambridge: The University Press. 1916. (Post 8vo, pp. 173 and 195. 2s. 6d. per volume.)

[6] *Hints for Hospital Orderlies.* By N. C. Fletcher, M.B., B.A., B.C.Cantab., M.R.C.S.Eng., L.R.C.P.Lond. London: J. Bale, Sons, and Danielsson, Ltd. 1917. (16mo, pp. 58. 6d. net.)

British Medical Journal.

SATURDAY, APRIL 7TH, 1917.

THE "SOLDIER'S HEART" AND THE "EFFORT SYNDROME."

DURING the first eighteen months of the war a very considerable number of men were invalided on account of heart troubles. Of these cases the most frequent were classed as "disordered action," and briefly labelled D.A.H., while the more definite cardiac lesions were lumped together as "valvular disease" and marked as V.D.H. With this rough classification they were somewhat promiscuously distributed among the hospitals in various parts of the country.

Early in 1916 the Director-General of the Army Medical Service decided to set up a military hospital for the study and treatment of heart disease as occurring in soldiers, with a view to weeding out the men really incapacitated by definite heart lesions and dealing with the cases of so-called irritable heart in a rational manner, after proper investigation of their actual condition. The Mount Vernon Hospital at Hampstead being available, it was taken over for the purpose and properly equipped for the special study of cardiac conditions and staffed by skilled experts under the lead of Dr. Thomas Lewis, who was appointed whole-time director of the work.

Already some valuable reports have been issued, and many more are already ripe for publication, but the Committee has thought well to instruct Dr. Lewis to prepare a report[1] on the work as a whole, embodying much of the special evidence obtained by his fellow workers, in order that the knowledge already acquired may be at the service of the profession without delay.

Much of this evidence is elaborate and the result of experiment, but one main point, insisted upon over and over again, contains the chief lesson that needs to be thoroughly appreciated by all who are called upon to diagnose the relative importance of a supposed cardiac lesion. It is not in the presence of a murmur or even a change in the heart's shape that cardiac inefficiency can be determined, but only by observing the action of the organ under the stress of exertion. In dealing with large numbers it is necessary in the first instance to sort out those who fail to pass a test of graduated exercise and who exhibit the series of symptoms to which Dr. Lewis would apply the term "effort syndrome." Some of these patients display no physical evidence of cardiac abnormality, whereas many of those who are not affected by the test may be found to have enlarged organs, irregular action, or valvular murmurs. These latter conditions are often quite compatible with full working power. But it has been the custom to label such cases as D.A.H. or V.D.H., and these labels have stuck only too firmly as the patient has been drafted from one institution to another.

Thus it has happened that far too many men have spent the greater part of their period of service either in light duty, inefficiently performed, or actually in hospital, on the strength of presumed heart disease. By careful selection and appropriate treatment at the Hampstead Hospital it has been proved possible to restore many such cases to full working capacity. No ill results have followed the application of graduated exertion, and about 50 per cent. of all cases examined are ultimately returned to duty of some kind, and of these about half are able to resume full duty.

In the second part of his report Dr. Lewis examines minutely into the value of the clinical evidence which has been accumulated, and discusses individual symptoms in detail. He has been impressed with the harm which may result from the careless use of the word "heart," and still more so by the indiscriminate labelling to which we have referred. At Hampstead the patients are led as far as possible to forget about their hearts. They are seldom allowed to remain in bed, but are treated more as convalescents than as patients, every effort being made to give them interests and occupation.

The detailed account of the blood changes observed, and the light that has thereby been thrown upon the causation of dyspnoea, deserve thoughtful consideration, but a still more practical series of observations upon the indications of the pulse-rate should engage the attention of every one who may have to deal with a soldier's heart. The most reliable criterion of a man's fitness to return to duty is to be found in the behaviour of his pulse-rate after exertion. By careful comparison with controls it has been found that a fairly constant fall takes place if no symptoms of cardiac insufficiency are present, whereas the fall takes about five times as long to occur where the "effort syndrome" is in evidence.

Another important observation, negative rather than positive in its application, relates to the use of digitalis and strophanthus. In the hurry of routine work and in the face of a previous diagnosis of D.A.H., it is probable that digitalis would be prescribed in a vast majority of such cases. Careful investigation of pulse-rate, blood pressure, respiration, and other symptoms before and after a course of digitalis, resulted in the verdict that the effects of the drug were negligible or non-existent.

With respect to the significance of the systolic murmur, a long series of observations made it clear that its presence or absence was of no value in estimating the soldier's capacity for work. This conclusion holds "irrespective of the character, conduction, or point of maximum audibility of the murmur in question." An interesting observation as to the effect of exercise upon the size of the heart is recorded. Normally, active exercise should result in a decrease in the diameter of the heart amounting to about one centimetre, but in the case of patients in whom the exercises induced breathlessness, pain, or vertigo—some of the symptoms included under the heading of "effort syndrome"—such decrease was not observed. Dilatation was not noted, but the absence of the normal diminution in the heart's size would seem to amount to it. The elaborate methods of examination by the electro-cardiograph and the string galvanometer do not appear to have yielded any conclusive evidence as to fitness for duty, or the reverse.

Turning now to the etiological aspect of the question, it may be noted that the proportion of patients returned to duty who were affected before joining the service was considerably less than of those who developed their "effort syndrome" during their training. The onset of the symptoms was, in most of the latter cases, more rapid, but the recovery equally so. With respect to the previous occupations of patients recruited from all sources, it was found that those who had been used to heavy work made the more satisfactory convalescence. Clerks and

[1] Report upon Soldiers Returned as Cases of "Disordered Action of the Heart" (D.A.H.) or "Valvular Disease of the Heart" (V.D.H.). Medical Research Committee. 1917.

others, accustomed only to sedentary work all day, and with only limited opportunities for exercise, have been, and probably often still are, expected to fall in at once with the rough routine of drill and long route marches. Many such men had already found themselves unable to undertake active games or other forms of exertion before enlisting, and when faced with the comparative hardships of military training, have broken down. The obvious conclusion to be drawn from these facts points to greater care in selection, after inquiry into antecedents, and more gradual methods of starting the training of recruits. The "effort syndrome" is often found to have arisen as an immediate sequel of infectious or other disease, and the occurrence of these in patients who are already the subjects of the cardiac trouble is apt to increase the symptoms of the latter. The influence of the many risks and dangers of the firing line, shell shock, gassing, burial, and other accidents, are all passed in review in Dr. Lewis's report.

Many of the conclusions referred to will come as a surprise to practitioners who have accepted the traditions of past times; but modern research has opened up new ideas in cardiology which have an intensely practical bearing upon the future well-being of young adults. The experience derived from the researches carried on by Dr. Lewis and his staff at Hampstead has now been brought within the reach of the whole profession, both military and civil, and will doubtless lead to improvements in our methods of classification and treatment in the future.

"BLASTOMYCOSIS."

A RECENT paper by Drs. Stoddard and Cutler[1] contains a general discussion of the rare cases in which yeasts or yeast-like organisms produce pathological lesions in man. Much confusion obtains in the literature and nomenclature here. No clear distinctions have been drawn between the infections caused by such different organisms or groups as *Coccidioides immitis*, blastomyces, oidium, torula, and true yeasts. Terms such as coccidiosis, blastomycosis, oidiomycosis, saccharomycosis, and torula infection, have been employed confusedly. In spite of much cultural and experimental study there has hitherto been lacking a satisfactory basis for the differentiation of these rare pathological conditions; to supply this basis has been the object of the authors named above. Dealing first with coccidiosis, they argue that it is a disease practically occurring only in males who have lived in the San Joaquin Valley, California, and is almost invariably fatal. The specific organism, *Coccidioides immitis*, never buds in the human tissues, but sporulates and develops hyphae; it produces granulomatous lesions like those of tuberculosis, and exhibits forms up to 30 or 40 μ in size containing many small ascospores; it is highly pathogenic for experimental animals, and grows mycelium and aërial hyphae in cultures. Patients with coccidiosis are not benefited by the exhibition of iodides. Drs. Stoddard and Cutler show, as others have shown before them, that coccidiosis can be clearly distinguished from the other varieties of what has been called blastomycosis, in which true budding of the infecting organisms is constantly present and sporulation is never observed. Excluding coccidiosis, therefore, the unsatisfactory term "blastomycosis" connotes infections with true yeasts, with torulas, and with oidiums. Each of these varieties has distinguishing points that separate it from the others.

True yeasts are distinguished from torulas by the fact that they form endospores under certain cultural conditions; Buschke has reported on two cases of cutaneous and systemic infection with true yeasts, but Drs. Stoddard and Cutler do not seem to have succeeded in finding any more instances in the literature. Injected into experimental animals the true yeasts are but little pathogenic.[2] Torula infections of human beings are commoner. The organism reproduces itself by budding and never produces a mycelium in cultures. In human tissues the torulas have around them a clear zone composed of gelatinous material. They destroy the cells in which they are enclosed with the production of vacuoles, enveloping themselves in a zone of chronic inflammatory reaction. The lesions produced are nodules composed of epithelioid cells, giant cells, and lymphoid cells, with or without caseation, and free from collections of polymorphonuclear leucocytes. Torulas are highly pathogenic for mice and rats. Cases of human oidiomycosis, usually termed blastomycosis, are not rare. The oidiums reproduce themselves in the tissues by budding, and in cultures sooner or later develop a mycelium. No gelatinous material is produced in the tissues, no large vacuoles are produced in the cells, and the lesions to which oidiums give rise are nodules with or without caseation, and deep and superficial abscesses. The pathogenicity of oidiums or experimental animals is slight, or even *nil*.

From the clinical point of view the three infections are not so readily distinguishable. The two cases of infection with true yeasts presented pictures of chronic pyaemia with skin lesions and abscess formation. Torula infection, of which six instances are known, appears as a chronic disease of the nervous system without constant or high fever and without leucocytosis; the organs affected are the brain, meninges, lungs, liver, spleen, and kidneys, but not the skin or the bones. Oidiomycosis is a less rare disease; there are over thirty recorded instances of systemic involvement, and more numerous cutaneous cases. It exhibits itself either as a chronic skin disease with miliary epidermic abscesses, or as a general or brain infection with fever and leucocytosis, the skin and all the organs being affected. The condition is usually improved by the administration of iodides; it is not known whether the iodides have any curative action in either torula or yeast infections.

From the botanical point of view there is still considerable uncertainty as to the classification of these various infecting agents. The true yeasts are usually classed as ascomycetes on account of their endospore production. The torulas do not form endospores, and often lack the power to ferment sugars possessed by true yeasts; they produce mycelium in cultures, and so are, botanically, oidiums. The oidiums have no characteristic method of fructification, and hence their systematic position is obscure. *Coccidioides immitis* is an ascomycete producing endospores and hyphae, and is, biologically speaking, a close relative of the yeasts.

Discussing the nomenclature of the diseases produced in man by these four organisms, Drs. Stoddard and Cutler remark that the term blastomycosis signifies no more than a disease caused by a budding organism. Hence it is not applicable to coccidiosis at all. It obscures the real differences existing between true yeast infections, torula infections, and oidium infections, and so should be discarded

[1] *Torula Infection in Man.* By J. L. Stoddard, M.D., and E. C. Cutler, M.D. Monographs of the Rockefeller Institute for Medical Research, No. 6. New York: The Rockefeller Institute for Medical Research. 1916. (Imp. 8vo, pp. 98; 9 plates.)

[2] W. P. H. Jensen, *Undersögelser over patogen gaer.* Copenhagen, 1903.

A MINISTRY OF HEALTH.

IN a leading article in our last issue we referred briefly to the proposals for the setting up of a unified central health department, or Ministry of Health, which have been so much in the air lately. During the past week popular interest in this matter has been stimulated by the appearance of a pamphlet edited by Major Waldorf Astor, M.P., and by a crop of articles in the lay press, some of which were evidently inspired and others very much the reverse. Major Astor's contribution consists of a report, under the title of *The Health of the People*,[1] by a body of Unionist members of Parliament, which has occupied itself with questions of public health at intervals since the beginning of 1914, and of which he is the chairman. It is a serious political tract pointing out in plain language the "fragmentary, confused, inefficient, and wasteful" condition of the existing public health services, both central and peripheral. The report first discusses the general principle that the care of the public health is a primary duty of collective authority. This is at present exercised by many widely different bodies, which should be co-ordinated and directed by a single department of State. The controlling mechanism at the centre being disjointed, local confusion and waste of effort are inevitable. There is thus a grave dissipation of energy from top to bottom of the present machinery. This is the argument of the report. The subject has engaged the attention of the medical profession for a long time past. The need for unification at the centre by the establishment of a Ministry of Health was definitely recommended by a committee of the British Medical Association which sat in 1868 conjointly with representatives of the National Association for the Promotion of Social Science.[2] This proposal was endorsed by the Royal Commission of 1869, but was not adopted in the Public Health Act of 1875. Again, in 1904, the British Medical Association tried to bring this important matter up for reconsideration by Parliament, and drafted a short bill, the effect of which would have been to make the head of the Local Government Board a secretary of State advised by a board of expert commissioners. The Association at that time took the view, which is now the policy adopted by Major Astor's committee, that evolutionary reform of the existing department most directly concerned already in the matter was the most expedient, though by no means the ideal method of central co-ordination. The authors of *The Health of the People*, while recognizing in so many words that eventually all public health matters should be under one department, have thus reached the position occupied by the British Medical Association thirteen years ago—namely, that the most practicable step towards reform would be to remodel the Local Government Board rather than to set up an entirely new authority. As to this, it should be observed that since 1904 the number, variety, and scope of legislative measures concerned with the public health have increased at an unprecedented rate, and many new issues have arisen. In this connexion a statement by Mr. Kingsley Wood, L.C.C., a member of the National Health Insurance Advisory Committee, is of some significance. Speaking on March 31st at a conference of representatives of approved societies and insurance committees, he is reported to have said that Mr. Lloyd George's great ideal when he launched the national insurance scheme was that it should be the foundation of a Ministry of Public Health, declining to associate it with the Poor Law administration and the taint of pauperism. With the author of the Insurance Acts as Prime Minister there was, he believed, an excellent prospect of the co-ordination of all existing health departments and agencies. The context of this expression of opinion would suggest that the reconstruction of the Local Government Board as the basis of a great health department is not regarded by the Premier as the right solution of the problem.

[1] *The Health of the People: A New National Policy.* Printed by the Argus Printing Company, Ltd., 10, Temple Avenue, E.C.4. (3d.)
[2] BRITISH MEDICAL JOURNAL, August 2nd, 1868, p. 194.

MEDICAL INSPECTION AND TREATMENT FROM 14 TO 18.

THE Departmental Committee appointed by the Board of Education to report on juvenile education in relation to employment after the war has presented its final report. The Committee was instructed to consider what steps should be taken to make provision for the education and instruction of children and young persons after the war, regard being had particularly to the interests of those who have been abnormally employed during the war, those who cannot immediately find advantageous employment, and those who require special training for employment. The main recommendations are two: The first is that a uniform elementary school-leaving age of 14 should be established by statute for all districts, urban and rural, and that all exemptions, total or partial, from compulsory attendance below that age should be abolished. The second is that it should be compulsory for all young persons between 14 and 18 years of age to attend day continuation classes prescribed for them by the local education authority, during a number of hours to be fixed by statute, which should not be less than eight hours a week, for forty weeks in a year. There would be certain exceptions to this second provision; young persons aged not less than 16 years who have passed the matriculation examination of a British university, or completed a satisfactory course in a secondary school recognized by the Board, would be exempt, as would young persons under efficient full-time instruction in some other manner than in a day continuation class. Most of the other recommendations are consequential; for example, the duty is imposed on local education authorities to provide continuation classes, and it is advised that where there is already a statutory limitation upon the hours of labour, the permitted hours should be reduced by the number required for the continuation classes. These classes should, it is advised, include general, practical, and technical instruction, and provision should be made for continuous physical training. The Committee lays stress upon the importance of physical training, and it is partly to make room for it that it desires the extension in the time given to continuation classes to be planned upon the basis of eight hours, rather than of six hours. The introduction of physical training, it is said, "should carry with it the extension to the whole adolescent period of the advantages of a school medical service, and also of clinical treatment, except in so far as that is rendered unnecessary in the case of young persons in employment who have already become eligible for medical benefits under the National Insurance Act." The Committee mentions, without, so far as we gather, directly endorsing, Sir George Newman's opinion that it will probably be desirable to arrange for the medical inspection of all young persons at the age of 16, and again shortly before the age of 18. In connexion with this matter the Committee advises that the Board of Education and the Home Office should consider the desirability of transferring the work of certifying as to the physical fitness of children for employment under the Factory Acts to the school medical officers. With regard to finance, the Committee estimates that, apart from the provision of premises, by 1921, if all young persons between 14 and 18 not otherwise educated came within the operations of its scheme, there would be 2,600,000 pupils to deal with, who would require about 32,000 full-time teachers. It puts the gross maintenance cost at anything from six millions to eight millions a year, in addition to the one million, or thereabouts, now spent upon the evening classes for juveniles. How much of this should be imposed upon the rates and how much upon taxes the Committee does not decide. It realizes that the smaller the burden the change imposes upon the rates the more readily will it be accepted by the councils and the ratepayers, and winds up by recommending "that the State grants-in-aid of present as well as future expenditure on education be simplified and very substantially increased."

A HOME RESERVE.

A LETTER published last week on a civil reserve for army needs, from a correspondent who described himself as late lieutenant R.A.M.C., contained the germ of an idea that may prove to be of value. We do not, however, think that this lies in the suggestion that a reserve should be formed here for service in France if and when fighting there becomes intense. This ignores the submarine menace, and assumes that the Channel will be open at the critical moment. The Germans cannot be supposed to have overlooked the advantage to them of closing the Channel against supplies and the transport of reinforcements and wounded, even for a few days, at a time of heavy fighting on the Western front. From which side the initiative came would not make very much difference in this connexion. If we take a wider view of the Western front and assume it to include the North Sea and the coasts of Great Britain, as in fact it does, it becomes apparent that a medical reserve at home may be a very necessary asset for the defence of the realm. It seems pretty clear that whatever may be the case in France, the initiative in the North Sea rests with the Germans. There is nothing new in this. So far as the soil of Great Britain is concerned, we have ever been on the defensive from the days of Elizabeth. Hitherto we have always contrived to fight our land battles on foreign soil; but though an invasion of Britain may be a very difficult military operation, it is clear that the naval and army advisers of the War Cabinet do not consider it impossible, for they take precautions. Military experts in less responsible positions have expressed their belief that the attempt will be made unless the German Staff is convinced that our arrangements here are so complete that any overseas invasion must inevitably fail. Even a limited landing which ended in failure might be thought worth the cost, because it would be a stab at the heart of the coalition which is opposing Germany, and by making our people feel what "unlimited" ruthlessness means, would help to satiate the hate for us with which the muddy-minded German has allowed himself to be imbued by his home tyrants. The military medical authorities have no doubt given attention to this possibility when making demands on civil medical practitioners in this country for service abroad, but it may be deserving of more than it has yet received. The question really is, Has the Army Medical Service now drawn very nearly as many men over 41 as it ought to have, even on military grounds alone, for service abroad? If there be need for an adequate home reserve to meet possibilities of the future—perhaps the near future—its organization might help to solve some difficulties while gratifying the ardent desire of many to do something for their country in a military capacity. This seems to be another matter calling for frank and friendly discussion between the two sides of the medical profession—military and civil.

SUSCEPTIBILITY AND IMMUNITY TO RAT SARCOMA.

AT the meeting of the Royal Society on March 22nd a paper by J. C. Mottram, M.B., and S. Russ, D.Sc., describing observations and experiments on the susceptibility and immunity of rats towards Jensen's rat sarcoma was read. Observations upon the modes of growth of Jensen's rat sarcoma following inoculation showed that there was a gradual transition from those cases in which the tumours spontaneously disappeared to those in which they grew in a uniformly progressive manner. The spleens of animals exhibiting various grades of active immunity were examined, and it was found that a marked accumulation of lymphocytes and plasma cells occurred in the spleen of an animal which would not support the growth of the tumour. Intermixture of such spleen cells and tumour cells before inoculation led to a diminished growth of the latter. The immune condition could be brought about experimentally in several ways. Animals made refractory to the growth of the tumour had been given various doses of x rays; the effect of such irradiation upon the blood was to cause a marked reduction in the number of lymphocytes. Under suitable conditions of exposure it had been possible to destroy the immune condition and thus convert refractory into tumour-bearing animals. There was a tendency for the immune condition to be restored. Histological and other evidence was brought forward which indicated that the failure of sarcoma cells to grow in an immune animal was due to an active resistance thereto on the part of the host.

DEMINERALIZATION OF MUSCLE IN PHTHISIS.

PROFESSOR ALBERT ROBIN has reported to the Academy of Sciences (*C. R.*, February 5th, 1917) the results of his investigation of the phenomenon of decalcification in phthisis. Briefly stated, he found by analysis that the diseased parts of the phthisical lung contained less and the healthy parts more mineral constituents, and he regarded this surmineralization of part of the lung as a defensive phenomenon. He argued that if the surmineralization were due to functional activity, the heart muscle, which never rests, ought to be richer in mineral constituents than other muscles, and this he found to be the case in healthy subjects. In the first subject the heart had 1.247 grams mineral constituents to 23.200 grams of total residue, while the soleus muscle had 1.152 grams for 25.600 grams of total residue. In the second healthy subject the proportion of mineral constituents in heart muscle rose to 1.597 grams for 26.627 grams of total residue and in ordinary muscle to 1.299 grams with 27.446 grams total residue. In cases of rapid acute phthisis the mineralization of the heart was markedly lower, though it tended to increase with the duration of the disease. In the chronic form, on the contrary, it was about equal to that of the healthy subject. The mineralization of ordinary muscle was found to be less diminished, but it decreased in the chronic form instead of increasing, as was the case of the heart. The total nitrogen of the heart only underwent trifling variations and reached its maximum in the cases of chronic phthisis, whereas in muscle it was in the chronic cases that the total nitrogen was most lowered. Professor Robin considered that these facts might be of value in treatment. In acute phthisis, where the resistance of the tissues was overcome by the infection, where the heart, the active muscle, was demineralized more rapidly than the inactive muscle, absolute rest was indispensable. In chronic phthisis analysis showed that mineralization of the heart was about normal, while in the other muscles it was diminished. The indication was therefore to give these subjects moderate exercise within the limits of their powers instead of insisting upon rest, which diminished the sum of resistance.

CERTIFYING SURGEONS AND COMPENSATION FOR LOSS OF INCOME.

CORRESPONDENCE has passed recently between the Association of Certifying Surgeons and the Home Secretary on the possibility of compensation being granted to those surgeons who, in consequence of the abolition of accident investigations, are able to show some definite loss of income. This Home Office war economy has meant a loss of £12,000 per annum to the profession, and most of this has naturally fallen upon surgeons who hold large and important appointments in manufacturing districts, quite a number suffering to the extent of between £200 and £300 a year. It was pointed out to the Home Secretary that surgeons holding the larger appointments had given up other work by arrangement with the department, some devoting their whole time to the office, and that a number combined the duties with those of other public appointments, such as medical officer of health, and also that in these cases the loss could not be made good by taking

fresh work. A strong point was made of the fact that when public officials holding appointments on similar terms have been dispossessed, compensation invariably followed. The Home Secretary was of opinion that the terms of appointment precluded compensation and that the establishment of new duties with consequent increase of remuneration during late years should counterbalance the loss complained of. In reply the Association of Certifying Factory Surgeons explained that the request had been made on the grounds of equity and custom in analogous cases, and also showed very clearly that the new duties referred to had been of very little monetary advantage to certifying surgeons outside the pottery districts, the most remunerative work of the kind instanced (that of appointed surgeon under special rules) being open to the whole profession. The Home Secretary, however, in spite of the faulty nature of the excuse provided by his advisers, has not seen his way to grant compensation.

THE Secretary of the Royal Society of Medicine is anxious to make a complete collection of the periodicals published by many military hospitals in this country and abroad. He undertakes that they shall be carefully bound and preserved and always kept available for reference in the library of the Society. Communications should be addressed to Mr. J. Y. W. MacAlister, Secretary, Royal Society of Medicine, 1, Wimpole Street, London, W., who adds that he would like, if possible, to have two sets of each periodical.

Medical Notes in Parliament.

The Military Service Bill.

SEVERAL important statements were made by Mr. Bonar Law in the debate on the Military Service Bill in the Commons on March 29th.

The cardinal proposal of the measure being the re-examination of the exempt, Mr. Hogge was able to renew his demand that the Government should accept full responsibility in regard to pensions for such men as were accepted for service by the army medical authorities and discharged through disability not due to wilful misconduct. It will be remembered that as the Pensions Scheme left the House of Commons a fortnight ago, the pensions line was drawn at men discharged on account of disability suffered in service or aggravated by service. Other men whose disability was in no way affected by service—men, that is, who had been passed into the service in error—might receive a gratuity not exceeding £150, the award to be determined by the Pensions Department.

Mr. Hogge and others argued that as under this bill men who had already been medically rejected and men who had been discharged from the army as disabled were to be brought into the army again, the matter was still more serious. Touching upon the "eccentricities of doctors and tribunals and of other authorities," Mr. Asquith said that so long as human nature was "fallible and variable," differences must occur. He was not at all sure that an equal number of men had not been passed into the army who ought to have been rejected to those who had been rejected and ought to have been passed. He suggested that when men had been re-examined, perhaps more fully, there should be generous treatment as to pensions.

Mr. Bonar Law, in his reply, promised to consult the War Office as to whether it was not possible to make the medical examination so perfect as to run no risk. To meet Mr. Hogge's pressure on the question of the gratuity part of the proposals, Mr. Law said he could not commit himself, but he thought there was a case that in all instances where a gratuity was given and nothing more the decision should be reviewed by a tribunal independent of the Pensions Department to ascertain whether the man should have gratuity or pension.

In Committee on the bill on March 30th there was debate on an amendment by Mr. Snowden to exclude from its operation men discharged disabled from the army. Mr. Forster, for the Government, reminded the House that not only men discharged from the army during the present war on account of disease and wounds were affected by the provisions, but also men who before the war were discharged from the army or the territorial forces on grounds which would not now justify discharge. Mr. Macpherson added that the War Office believe that the men in these two categories would yield three divisions of trained men. Several members expressed anxiety as to this part of the scheme, Mr. Pringle, for instance, raising a question as to the risk of recalling to the colours men who had been discharged on account of nervous breakdown. Ultimately the amendment was rejected by 150 votes to 60. Mr. Macpherson declined to accept an amendment to provide that the examination of a man should be by a Medical Board of not less than two doctors, one of whom should be the man's own doctor if so desired; but he agreed that a direction should be given to the travelling Medical Boards to pay attention to any medical certificate supplied to a man by his own doctor. He also agreed to extend to fourteen days the time of notice to be given to a man to submit himself for re-examination, and, further, that no man should be called upon for re-examination within six months of his last rejection or discharge.

On April 2nd the Committee on the bill was resumed. Mr. Nield pressed that an amendment should be inserted so as to secure definitely that attested men, equally with unattested, should have right of appeal to a tribunal on the question of their health. He said that many obviously unfit had produced certificates from private practitioners, but the military representative had objected that the tribunal had no right to entertain an appeal on health grounds, because the man had attested, and had therefore precluded himself from raising the question. Mr. Macpherson, speaking for the Government, said that as the bill referred to men who had been rejected, the old distinction did not any longer exist, and therefore there was no need for the amendment. Mr. Nield was satisfied with this assurance, but a number of other members were not, and Sir John Simon suggested that certain words should be inserted giving explicitly the rights of appeal. Sir F. E. Smith expressed his willingness to make this addition on report. The Committee, however, divided (Mr. Nield not having been allowed to withdraw his amendment), and this amendment was rejected by 159 against 57.

Another amendment was moved by Sir Charles Hobhouse to exclude from the operation of the bill any disabled soldier who, owing to the loss of a limb, was permanently unfit for any military service. On this, Mr. Macpherson promised an amendment on report to cover the cases of soldiers disabled by battle wounds. Sir William Collins urged that there were many other categories of men who ought not to be put to all the trouble of being called up again for examination, and quoted an instance of night blindness due to structural changes. Sometimes unkind things had been said in regard to medical examination. Many of them were unjust and unfair; but there had been unfortunate mistakes in the past, and he hoped the assurance of Mr. Bonar Law that some improvement would be made in Medical Boards in the future would be carried out, that opportunity would be given to resort to specialists and experts, and that certificates produced by the individual's own doctor would not be disregarded. On Mr. Macpherson's assurance, Sir Charles Hobhouse withdrew his amendment.

Mr. Macpherson accepted an amendment by Mr. King, providing that when a man had had one month in the army or navy he should not be called up for examination until a year after he had left the army, and also agreed to insert one providing that a man who on re-examination was not accepted "on the ground of permanent and total disability for service" should receive a final discharge.

On April 3rd, in fulfilment of pledge, the Solicitor-General moved an amendment definitely securing for voluntarily attested men (who had been rejected) the same rights of appeal as belonged to the attested called up under the Compulsory Service Act. This was done in order to make clear that these men might appeal on grounds of physical unfitness. The provision was approved.

Mr. Macpherson next moved an amendment to exempt men discharged from the army on account of wounds received in action or on account of illness caused by poison gas. Mr. Butcher wished to broaden the exemption so as to include all men discharged from the army because of ill health. He urged, for instance, that men discharged on account of suffering from shell shock, or because of

rheumatism brought on through standing in wet trenches, should have the same relief. Mr. Macpherson said that such a wide enlargement would make the clause practically a dead letter, and Mr. Butcher's proposal was defeated by a large majority.

At the instance of Sir Charles Nicholson, Mr. Macpherson agreed that among the exempt should be included sufferers from neurasthenia or allied nervous disorders, provided that a special medical board certified that the disorder was the result of military or naval service in the present war.

The Criminal Law Amendment Bill through Committee.

The Grand Committee on the Criminal Law Amendment Bill held its final sitting on March 29th, when the measure was ordered to be reported to the House as amended. Mr. J. W. Wilson presided. At the instance of the Home Secretary a new clause was added to give courts in certain cases power to order the detention of girls under 18 years of age until they attained the age of 19, or for less period, the detention to be in institutions or homes approved by the Secretary of State.

Detention of Girls.

This power would be applicable where a girl was convicted of loitering or importuning for prostitution, or other offences of a like nature, and when the court was of opinion that by reason of the girl's mode of life or associations it was expedient that, in lieu of punishment, such order should be made. In such cases also, a girl under remand or awaiting trial might be committed to a home until in the regular course decision could be reached. But it was laid down that an institution or home should not be approved for the purpose of the section until the Secretary of State was satisfied that prostitutes of 21 years of age and upwards were not received in it.

The Home Secretary declined to accept an amendment by Mr. Rawlinson that twelve months should be made the maximum period of detention, but was willing to consider a suggestion by Mr. Burns that in some way the cases should come under revision annually. He promised, if he thought that qualification desirable, to introduce an amendment on the report stage.

Penalty for Communication of Venereal Disease.

Mr. Duncan Miller proposed another clause to the effect that where conviction for any one of several sexual offences enumerated in the Criminal Law and some other Acts brought liability to punishment up to two years' imprisonment, the court might regard the communication of venereal disease as an aggravation of the offence, and sentence the offender to penal servitude for not more than five years. Mr. Miller withdrew this proposal on a promise by the Home Secretary to introduce a clause of the kind on the report stage.

Hospital Accommodation at Sandhurst.—In reply to Mr. Evelyn Cecil, who asked a question on March 28th as to increased hospital accommodation at the Royal Military College, Sandhurst, in view of the addition to the number of cadets, Mr. Macpherson said that temporary arrangements had been made to provide extra hospital accommodation (20 beds) in the commandant's quarters at Staff College. During the recent outbreak of mumps certain of the halls of study were utilized. Further hospital improvements were under consideration. There had been two deaths, one from cerebro-spinal fever and the other from pneumonia.

CRITICISM OF THE ARMY MEDICAL SERVICE.

THE issue of the *World* for March 20th contained an article by "Medico" on the Army Medical Service, which has recently been brought to our notice. It seems to be designed to bring together all the criticisms of the Army Medical Service which have ever been made since the beginning of the war, and, though there is internal evidence that the writer's information is neither sufficiently extensive nor sufficiently recent to qualify him for the task, it may be worth while to examine some of his points in the light of such information as we possess, even though it be not on all points so complete as we could wish.

The criticism placed first and foremost is directed to red tape and excessive militarism. A military department must be conducted on military principles, but excessive militarism is, of course, bad; so is excessive red tape. We understand the expression "red tape," when used as a term of reproach, to imply the overgrowth of formal details, and confusion between the end and the means. But there must be a certain amount of red tape, otherwise the several units of organization would dissolve into chaos.

As one illustration of excessive militarism, we have the assertion that there is nothing to prevent any mediocre and touchy senior officer with antiquated notions dictating to a junior of proved capacity, the latter being obliged to obey his superior's commands, even should the patient's limb or life itself be endangered thereby. Whether anything of this kind really happened at the beginning of the war we do not know, but we do know that a system has been elaborated which ought to reduce such a defect to a minimum, if not abolish it altogether. There is in every army a consulting surgeon and a consulting physician, selected for their eminence in civil practice; in addition there are two consulting surgeons with the rank of surgeon-general, the one at the front, the other at the base in France, and there are consulting physicians with the rank of colonel both at the front and at the base. It is the duty of these officers—and we have reason to know that it is ably fulfilled—to inspect all hospitals and other medical units and to keep an eye generally on how the work is being done. In addition, large military hospitals with the forces abroad are divided into two sections—surgical and medical—with a special officer at the head of each, and a "surgical specialist" in addition, and we have yet to hear of any case in which the officer commanding a hospital, although of senior rank, has interfered with the treatment followed by the specialists. If he did, there would be the obvious appeal to the consulting surgeon. The temptation that besets the regular R.A.M.C. officer is not to interfere with treatment, but to let his mind be bent too much on evacuating the patients from the hospital under his control, which he is apt to believe is a sure way of pleasing his immediate superiors. The communications between consulting surgeons and the hospital specialists are of the nature of consultations. There may be differences of opinion as to the best method of dealing with certain classes of cases, and the consulting surgeon may hold to his until satisfied that it is erroneous, but it is a difference of opinion which exists between two practitioners specially qualified to deal with such matters. More than this, in nearly all the armies, and even in the garrison at Kut, medical meetings are held with varying frequency where every officer, of whatever rank, is expected to express his opinion freely, and out of these discussions much good has come. In some cases the experience gained by the consulting surgeons from their own observations and from these discussions has been crystallized into memorandums which have been issued for the general information of the Army Medical Service.

So far as the clinical work of the medical services with the British armies abroad goes, by far the most important point seems to us to be that great diligence has been shown in learning from the experiences of the war; but we are disposed to think that something more might be done in the way of disseminating this information through the medical press, since much of it is of immense value to those surgeons and physicians who have to treat the men in home hospitals, and it has often happened that their patients are in an acute stage of their disorder or septic infection.

We are disposed to agree that the Army Medical Service has not always used men of special training and capabilities in the particular department of practice in which their services would have been of the greatest value, but, so far as we have been able to ascertain, this defect has been eventually rectified, and more speedily now than before.

As to the alleged example of the antiquated spirit of Army Medical Service officers shown early in the war in refusing to have anything to do with motor ambulances, we can only say that it is not in accord with information in our possession, and directly contrary to facts within our knowledge. It was unfortunate that motor ambulances were not available in sufficient numbers to deal with the earliest stage of the war; but the motor ambulance was a comparatively new device, and a sufficient number were not in existence. It may be that greater provision ought to have been made during the year or six months before the war; we suspect that the explanation of any failure in this direction is to be found in what the Treasury calls economy. With these few remarks on the early part of the article, we pass on to the series of questions with which it concludes.

The first two have to do with the discharge of disabled men from the army, and the answer seems to be that many defects have been disclosed, that many of them

have been remedied, that machinery has been set up to remedy others, and that others are now under the consideration of the House of Commons. The sixth question is cognate—whether convalescent officers are "herded together in 'internment camps' instead of being released on sick leave as formerly." We believe that convalescent officers are not sent to internment camps—whatever may be intended by that term—but to special hospitals which have been set up at large expense because experience showed that the old plan of giving sick leave, which might be indefinitely extended, was open to many abuses.

Another question is whether out-patient departments are in contemplation in connexion with big general hospitals. This question is not clearly worded. If military hospitals are meant, we believe that it was at one time contemplated that men suffering from injuries of an orthopaedic nature should be treated as out-patients. Whether this plan exists on any large scale at the present time we do not know, but we believe not, since the policy is to send men who no longer need hospital treatment to command dépôts, where they receive appropriate training.

Another question is whether beds are occupied for an unnecessarily long time by men who are receiving practically no treatment. We believe that a good many instances could be found, especially in the smaller V.A.D. and private hospitals, in which this does occur, but we have reason to believe that the existence of this defect is realized by the Army Medical Service, which is the first step towards remedy. Probably a good many of these institutions would be much more useful if they were used solely for convalescent men who require no active medical or surgical treatment. It is also asked whose evidence is relied upon as to the efficacy of R.A.M.C. arrangements in provincial military hospitals. The answer we believe to be, the evidence of the consulting physicians and surgeons to the various home commands. It is very possible, however, that they are being asked to cover too large an extent of country, and that they need the assistance of deputy inspectors. The position with regard to V.A.D. hospitals and county associations on the one hand and the Army Medical Service and the consultants on the other, seems to need looking into.

Two other questions may be dismissed very briefly. We believe that a few doctors are still serving in the combatant ranks, but, we think, all at their own desire. Very many of those so serving at the beginning of the war have changed over into the R.A.M.C., and the few remaining will probably see it to be their duty to take the same course. If there are senior students still serving in the combatant ranks it is contrary to instructions, which ought to be, and we believe have been, brought to their notice and to that of their commanding officers.

We do not wish to be misunderstood as contending that the administration of the medical service is incapable of improvement. We know of no human institution of which this could be said, and it is directly negatived by what has happened since the war began. We then had a medical service for an expeditionary force, for home establishments, and for India. No more than the army medical service of any other nation had it any recent experience of a European war, much less of a war on a scale to which this has developed.

We believe that all parties will agree that we have reached a crisis in medical affairs in connexion with the present war. The profession at home has been so denuded by the demands of the army that the difficulty of providing adequate medical attendance in industrial districts, including munition districts, and for the civil population generally, has become acute. The difficulty must be met, and it can, we believe, only be met by frank and free discussion between the medical men in the army, as represented by the senior administrative officers of the medical service at home and abroad on the one hand, and the representatives of the civil profession on the other. Economy must be practised on both sides, and we are disposed to think it true that this lesson has been learnt by the civil committees more thoroughly than by the army medical staff. Past experience, however, of the readiness of the chiefs of that service to face difficulties convinces us that they will be prepared to take the necessary steps, and to economize their use of medical services so far as is compatible with the welfare and efficiency of the armies which are defending this country abroad.

THE WAR.

THE LEUCOCYTE COUNT AS A GUIDE TO TREATMENT OF WOUNDS.

STABSARZT DR. P. LINDEMANN has drawn attention to the great practical value of the leucocyte curve as an indication for surgical interference in gunshot wounds. In such wounds the initial infection was combated in the body with a twofold result. On the one hand, where resistance was good, the activity of the infection was suppressed either permanently or for a varying period—latent infection. On the other hand, where resistance was weak, the activity of the infection persisted—manifest infection. The treatment, conservative or active, to be adopted depended on the early recognition of the nature of the infection, whether latent or manifest. As an illustration, two cases of gunshot fracture are described in which an immediate operation was performed for removal of fragments; in both there was a similar rise in temperature and pulse frequency; subsequently in the one case a suppression of the active infection, in the other its continuance necessitating another operation.

The clinical discrimination between such cases involved a loss of several days, and Lindemann claims that this could be avoided by making use of the leucocyte curve. For this purpose it was necessary that there should be a daily record, the curve being most conveniently plotted on the temperature chart. The initial leucocytosis was extremely rapid, and was completed within a few hours from the wounding, the leucocytes increasing two to four-fold. During the next twenty-four hours the leucocytes as rapidly diminished, becoming normal, or almost normal, in number. If the infection had been rendered latent by this reaction no further increase took place. If, on the other hand, the infection proved to be manifest, a second sudden or gradual leucocytosis occurred. Lindemann embodied these conclusions, which were based on a study of his cases, in four types of leucocyte curve:

(*a*) Typical of latent infection. First count four hours after wounding; high leucocytosis (34,000). A few hours later almost normal; further course normal.

(*b*) Typical of latent infection, but first count twenty-four hours after wounding. No leucocytosis.

(*c*) Manifest infection. First count two and a half hours after wounding. High leucocytosis (30,000). After a few hours a fall almost to normal, with, in the next twelve to thirty-six hours, a second rise, persisting till operative interference; then fall to normal.

(*d*) Manifest infection, but first count twenty-four hours after wounding. No leucocytosis (the initial rise and fall not having been registered); a few hours later a sudden rise in the curve, persisting till relief by operation.

The indications deducible from these curves were as follows: High leucocytosis at first denoted the initial reaction; its rapid fall to the normal without further rise indicated conservative treatment. Low leucocytosis on the second day did not denote the absence of manifest infection. A steep rise on the second day strongly suggested a manifest infection, and its continuance confirmed it. A relatively low leucocyte count in spite of the presence of a manifest infection denoted a comparatively non-virulent infection.

Examples.

Bullet Wound of Arm.—A few hours later, leucocytes 19,000, temperature 39° C., pulse 110. Second day, leucocytes 22,000, temperature 38.5° C., pulse 110. The rise in the curve on the second day pointed to a manifest infection, indicating operation Bullet track laid open; suppuration; fall in leucocyte curve, and further course normal.

Grenade Wounds of Shoulder, Buttock, and Leg.—Fragments removed by operation from the two last. Second day: Leucocytes 14,200. Third day: 32,187, pointing to a manifest infection, indicating operation. The shoulder wound was opened up—suppurated, with discharge of a fragment of clothing. Fall in leucocyte curve, and further course normal.

Bullet Wounds of Cheek and Neck.—Leucocytes normal from the first count (taken twenty hours after wounding). A rapid rise of temperature on the second and third days gave no cause for uneasiness, since the blood count proved decisively that the course was uncomplicated.

Grenade Wound of Thigh.—Gas gangrene; excision of diseased tissues; leucocyte curve of type (*d*). On the twentieth day the curve again rose, and reached 30,000 on the twenty-first (the temperature showing no significant change); operation,

[1] Bruns's *Kriegschir.*, Heft 24, p. 608.

thus indicated, disclosed a subcutaneous extension of the gas gangrene; subsequent curve and course normal.

Grenade Wound of Abdomen.—Ileum perforated; laparotomy; leucocytes 26,832 two hours after wounding; rapid fall in curve. On the third day, although the pulse-rate and temperature were still high and vomiting persisted, a normal leucocyte count, 9,600, gave assurance of a favourable course; recovery uninterrupted.

In distinguishing latent from manifest infection our present criteria—fever, pulse, and the appearance of the wound—were, in Lindemann's experience, insufficient. Except for those surgeons who advocated immediate operation in all gunshot wounds, the leucocyte curve afforded information of great value.

GAS GANGRENE.

DR. L. ZINDEL [1] has written a summary of the latest views on gas gangrene, based on an examination of the recent literature of the subject. The ratio of incidence was as 1 to 5 or 6 between the upper and lower limbs. The disease rarely occurred in the trunk, very rarely in the lungs, and only with great rarity in the brain. Most observers agreed that the extensive lacerations in shrapnel wounds formed a predisposing cause; but it also followed bullet wounds, which at times produced lacerations comparable with those from shrapnel. The nature of the soil had great influence; garden earth and the contaminated soil of the field of operations were highly infective, and the humus was the most dangerous of the layers. Climatic conditions also had an influence, an increase in the number of cases usually following periods of prolonged heat, damp, or cold. As regards the classification of forms, the purely topographical divisions into epifascial and subfascial was criticized by some authors. Freund even doubted whether, on clinical and bacteriological grounds, the purely epifascial form should be regarded as true gas gangrene. Probably the most useful classification was: (1) Stage of local phlegmon; (2) stage of spreading phlegmon; (3) stage of gangrene.

The period of incubation had not been definitely ascertained. The disease usually appeared between the second and fifth day after wounding, but cases of late infections were met with, and these were equally malignant. Metastatic inflammations occurred in many cases, but no attempts appear to have been made to demonstrate the bacillus in the secondary foci.

The list of microbes which were reputed to be the cause of the disease had during the war been greatly reduced. Fraenkel's bacillus was generally regarded as the main cause; the bacillus of malignant oedema was no longer mentioned, while the *B. sarco-emphysematosus hominis* and an anaërobic streptococcus had been added to the list. The bacillus had never been demonstrated in the blood of living patients, but it was frequently present in the heart blood after death.

With regard to symptoms, many authors referred to the absence of suppuration in true gas gangrene; the lesions were mostly those of necrosis and gas formation. Fever and general symptoms were slight in the epifascial form but well marked in the severer varieties. Drowsiness was generally a marked symptom in severe cases, and denoted an unfavourable and fulminating course. An early diagnostic symptom was pain in the limb, distal to the wound, usually followed in about three hours by complete anaesthesia. The *x* rays were of great value, especially in the diagnosis of the deep forms, which could be detected in their earliest stages.

The mortality of gas gangrene varied between 12 to 53 per cent., as compared with 70 to 90 per cent. in civil practice.

With regard to treatment, prophylactic excision of the wound had been largely practised; it could, however, be adopted only in small wounds and was of most value when performed within twelve hours of wounding. Among chemical agents the local application of hydrogen peroxide and tincture of iodine were recommended. The employment of the former by injection in the general treatment of gas gangrene had been followed by death from gas embolism in five cases; whether the fatal result was due to a technical failure (injection into a vein) was not known. To the usual methods of incision and excision, accessory measures had been added such as cauterization and plugging with ichthyol-glycerine tampons. No agreement appeared to have been reached by surgeons as to the precise indications for amputation.

[1] Bruns's *Kriegschir.*, Heft 31, p. 257.

CASUALTIES IN THE MEDICAL SERVICES.

ARMY.

Killed in Action.

CAPTAIN E. ROBINSON, R.A.M.C.

Captain Edmond Robinson, R.A.M.C., was reported as killed in action, in the casualty list published on March 28th. He was educated at Trinity College, Dublin, where he graduated as M.B., B.Ch., and B.A.O. in 1915, joined the Special Reserve of the R.A.M.C. as lieutenant on August 13th, 1914, joined for service on March 29th, 1915, and was promoted to captain a year later.

LIEUTENANT D. R. KHARAS, I.M.S.

Lieutenant Darabochi Rustomji Kharas, I.M.S., was reported as killed in action, in the casualty list published on March 29th. He took a temporary commission in the I.M.S. on July 6th, 1916.

Captain M. R. Hughes, Australian A.M.C.

Wounded.

Captain P. S. Blaker, R.A.M.C. (temporary).
Captain A. B. Chapman, Canadian A.M.C.
Captain A. C. Falkiner, R.A.M.C. (temporary).
Captain E. H. Moore, D.S.O., R.A.M.C. (temporary).
Captain M. A. Nicholson, I.M.S.

Lost at Sea.

In the casualty list published on March 31st appear the names of Captain G. L. Atkinson, R.A.M.C., drowned, and Staff Nurse J. J. Phillips, Q.A.I.M.N.S. Reserve, as "missing, believed drowned." Presumably both were lost in the hospital ship *Asturias*, torpedoed and sunk by a German submarine on the night of March 20th–21st. The number of lives lost appears to have been 43. The ship had, very fortunately, landed 900 sick and wounded shortly before she was sunk. It may be remembered that once before, some two years ago, a German submarine attempted to sink the *Asturias* on the cross-channel voyage; on that occasion the torpedo missed.

CAPTAIN G. L. ATKINSON, R.A.M.C.

Captain George Louis Atkinson was educated at King's College Hospital, where he was Warneford scholar in 1893, took the diplomas of L.S.A. in 1896, and M.R.C.S. and L.R.C.P.Lond. in 1897, subsequently acting as house-surgeon of King's College Hospital, and as clinical assistant at the Victoria Hospital for Children, Chelsea. He then went into practice at Hampton Hill, Middlesex, where he held the post of medical officer of Hampton Isolation Hospital. He took a temporary commission as lieutenant in the R.A.M.C. on November 23rd, 1914, and was promoted to captain on the completion of a year's service.

Died on Service.

LIEUTENANT-COLONEL MICHAEL J. WHITTY, M.D., R.A.M.C.

It is with great regret we have to record the death of Lieutenant-Colonel Whitty, which took place on March 28th. For the past four months Colonel Whitty had been unable to carry out his duties as medical inspector of recruits in the Western Command owing to cardiac disease, to which he succumbed. Michael Joseph Whitty came of an old Irish stock, of which many generations had given brilliant men to the army. He was born in 1863, studied medicine at Richmond Hospital, Dublin, and Queen's College, Cork. He graduated M.D., M.Ch.R.U.I., in 1885, and immediately entered the R.A.M.C. He put in service in Ireland, Capetown, Hong Kong, and Egypt. On the death of Colonel MacSwiney, Colonel Whitty was appointed to the vacancy, and since 1906 was the chief medical recruiting officer for Liverpool. His connexion with Liverpool was cemented by his becoming a member of the Liverpool Medical Institution and surrounding himself with many medical friends. At the beginning of the war Colonel Whitty's appointment became much more onerous, and there is little doubt that the wholeheartedness with which he unflinchingly carried out his duties undermined his health. His merit in this respect did not

pass unnoticed, for his days of illness were brightened by the fact that his name recently appeared in the *Gazette* among those who had done valuable service during the war. Lieutenant-Colonel Whitty belonged to the quiet type of Irishman. Unassuming in manner, his frank face revealed the amiability of the man. He appreciated a joke, and never failed to see the bright side of life, even when this was not so easy to discern. He often attended the meetings of the Medical Institution, and thoroughly enjoyed meeting his friends. Dr. Whitty was assiduous in keeping himself abreast of medical science, and never permitted the military side of his life to predominate over the medical. To his friend and medical attendant, Dr. W. T. D. Allen, whose unremitting care Colonel Whitty had during his illness, he never tired of expressing his gratefulness. Colonel Whitty has left a widow, and had five sons. One of the sons was killed in action in July, 1916; another has received the Military Cross; and the third and fourth are on active service in France. The youngest is still at school. The funeral took place on March 31st with full military honours. A memorial service was held at St. Philip Neri's Church; many of his friends and fellow officers were present to pay their last respects to a man whom to know was indeed a pleasure.

CAPTAIN J. C. MCDIARMID, N.Z.M.C.

Captain John Campbell McDiarmid, New Zealand Medical Corps, died on March 24th. He was the son of Dr. R. C. McDiarmid, of Huntly, New Zealand, formerly of Blairgowrie, and was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1907, subsequently filling the posts of house-surgeon and house-physician of Perth Royal Infirmary, and of physician-superintendent of the Strathmore Hospital for Infectious Diseases.

THE LATE MAJOR SYDNEY D. ROWLAND, R.A.M.C.

The secretary of the Officers' Mess of which Major Rowland was a member sends the following appreciation:

His brother officers who had the privilege of knowing him and working with him, and who were accustomed to depend so much on his never-failing kindness and ready help, wish to place on record their deep sense of the loss which they have sustained in his premature death. While this loss is one which science and the advance of knowledge must share—for he left a gap which cannot easily be filled—it is also a loss which is deep and personal to every one of those who were proud to call him friend. It could not be otherwise; his kindly nature, his brilliant but never caustic wit, his much more than average ability, and his transparent honesty of mind and purpose compelled and drew an admiration and affection which were freely and ungrudgingly given. To rightly appraise his character is a task beyond my powers, but two experts in human values have given to our hand eulogies which we may well apply to him whom our grief seeks to honour:

> His life was gentle, and the elements so mixed in him
> That nature might stand up, and say to all the world,
> This was a man.

Emerson, speaking at the graveside of his dead friend, David Thoreau, pronounced these words, "Wherever there is knowledge, wherever there is beauty, wherever there is virtue, he will find a home."

Of Rowland's views concerning the deeper things of life we have no certain knowledge, but all realized that his was no shallow nature, and that the countless ripples on the surface could not hide the unplumbed depths beneath. Moreover, he had the one thing that matters most, the one thing needful, without which all else is nothing and less than nothing—he had love. And though his death was not the direct outcome of any battle casualty, yet he died in the performance of his duty, and while earnestly endeavouring to reduce the sum of suffering. He gave his life for his friends, than which no man hath greater love.

DEATHS AMONG SONS OF MEDICAL MEN.

Johnson, Howard Fife, Second Lieutenant East Kent Regiment, the Buffs, only surviving child of Dr. George Lindsay Johnson, M.D., F.R.C.S., of Hampstead, and of Johannesburg, killed March 9th, aged 25. He received his commission in December, 1915.

Howe, Frederick William Duncan, Private, Loyal North Lancashire Regiment, reported missing and afterwards reported wounded and missing, was killed in action on September 9th, 1916, aged 20. He was the son of Dr. Joseph Duncan Howe, of Preston, and had passed with honours the medical preliminary examination of the College of Preceptors, London.

Milligan, William Harold, second son of Dr. William Milligan, formerly of Wirksworth and later of Yardley, was killed in action in France on March 2nd. After a residence in British Columbia for some twenty years he let his fruit farm and was engaged for a year in guarding Germans interned in the Rockies and occupied in constructing roads. In November he came with a contingent to England, and was almost at once sent to the front.

NOTES.

THE name of temporary Captain E. P. Satchell, M.B., R.A.M.C., appears in the *London Gazette* of March 30th among a further list of names brought before the Secretary of State for War for distinguished services rendered in connexion with the war.

Scotland.

MOBILIZATION OF THE PROFESSION.

A WELL attended meeting of medical practitioners in Glasgow and the West of Scotland was held on March 27th at the Hall of the Royal Faculty of Physicians and Surgeons of Glasgow, under the chairmanship of Dr. Ebenezer Duncan, President of the Royal Faculty of Physicians and Surgeons. The object of the meeting was to discuss two main points: (1) The desirability of immediate compulsory mobilization of the whole nation; (2) the desirability of such mobilization being applied to the medical profession in advance of the rest of the community.

The Chairman explained that the Central Medical Committees, which were the administrative bodies under the Military Service Acts, had decided that the voluntary system of providing medical men for the army had reached the limit to which it could be pushed. According to the secretaries of local committees all over Scotland, the districts had been almost "bled white" of medical men, and the wants of the civil population could now only be met by some method of substitution. They were of opinion that that substitution should be compulsory, and in the hands of the central authorities. These facts had been represented to the Government through the Director-General of National Service, who at present was considering what to recommend. It must be decided in Parliament by legislation. Personally he thought it would have been better if the central bodies, before going to the Director-General, had laid the subject before the profession. They had not done this, and therefore the Faculty had summoned the meeting. He agreed that the voluntary system could no longer provide the medical officers required for the army, and he thought the whole community would before long have to be compulsorily mobilized. But he knew of no argument applying to the medical profession which did not apply equally to any other profession.

Dr. McGregor Robertson proposed that the time had come when the whole nation should be mobilized for the successful and rapid conclusion of the war, so that all fit persons should be liable to be called upon by the Government to render service in naval, military, and civil departments, due regard being paid to age, training, and circumstances.

Dr. John Russell seconded, and the motion was unanimously adopted.

Dr. James Wylie moved a resolution approving the compulsory mobilization of the profession of medicine in advance of the rest of the community, and Dr. D. Newman seconded it.

Dr. Charles Robertson sounded a note of warning with regard to the constitution of any committee set up by the Government to take control of the profession.

Sir David McVail vigorously opposed the motion, and Dr. McGregor Robertson moved that the meeting, "having expressed its opinion that the whole nation should without delay be organized for war, is nevertheless strongly of opinion that to compulsorily mobilize the medical profession in advance of the rest of the community would be unjust alike to the profession and the community at large."

Dr. J. F. Lambie seconded, and Dr. McGregor Robertson's motion was carried unanimously.

Considerable discussion took place on the question of arrangements in the event of mobilization, and the composition of the present Scottish Medical Service Emergency Committee was criticized by several speakers. Among those taking part in the debate were Professor T. H. Bryce and Dr. Murray Young.

Dr. Charles Robertson proposed that the committee to be appointed by the Government in the event of mobilization of the medical profession should supersede the Scottish

Medical Service Emergency Committee, and should contain a majority of medical practitioners in active general practice.

Dr. John Ritchie moved that the present committee be retained, but, on a division, Dr. C. Robertson's proposal was carried by 45 votes to 42.

The Edinburgh Royal Maternity Hospital.

The annual meeting of the Edinburgh Royal Maternity and Simpson Memorial Hospital was held on March 26th, when Sir Alfred Ewing, K.C.B., Principal of the University of Edinburgh, presided, and in moving the adoption of the report, stated that 1,890 cases were treated by the hospital during 1916, being an increase of 123 over 1915. The number of indoor cases (738) was again a record. The glory of such an institution was that a very large proportion of the cases it had to assist were what might be called difficult cases, in which the need for help was the greatest. The terrible loss of manhood which the war had brought about had made them realize more than ever how important it was to make good those losses by aiding and encouraging in every possible way the birth of children. Even now, though far fewer children were born, it was still the unhappy truth that about one in nine of them failed to survive the first twelve months after birth. This was due for the most part to preventable causes, and the efforts which those concerned with infant welfare were making were directed essentially towards a reduction of that figure. The Rev. Canon Stuart seconded, and the report was adopted. Dr. Maxwell Williamson, the city medical officer, referred first to the falling birth-rate, and directed attention to the fact that it had not fallen more during war years than during the forty-five years immediately preceding the war. The infantile death-rate during 1916 indicated clearly the necessity for associating a maternity with a child welfare scheme. In Edinburgh 575 infants under one year died during 1916, and of these deaths no fewer than 220 were due to prematurity and immaturity. An interesting fact in this relation was that 175 deaths occurred during the first four weeks of life, showing the gravity of the neonatal death-rate. These figures proved conclusively that much hope might be entertained from the association of the Royal Maternity Hospital and other maternity centres with the Corporation under its new scheme of mother and child welfare.

Ireland.

Graded Scales of Salaries for Poor Law Medical Officers.

At the last meeting of the Kilkenny Board of Guardians the application of the medical officers of the union for an increase of salary was considered. The doctors applied for an immediate increase to £150 a year, with triennial increments of £10 until a maximum of £200 a year was reached, the increases to be retrospective. Dr. Hourigan, one of the Poor Law medical officers, has a service of forty-one years and Dr. O'Gorman twenty-one years' service. After various amendments had been moved, the following scale of salaries was passed, twenty guardians voting for it and eleven against: an immediate increase to £150, with increments of £10 every four years until a maximum of £200 a year was reached. Immediately the result was declared carried one of the guardians handed in a notice of motion to rescind the decision at a future meeting. Many of the guardians warmly protested against this procedure,—as, owing to the very busy times in connexion with the tillage schemes, rural guardians found it almost impossible to attend meetings. It is to be hoped that the Local Government Board will sanction forthwith the improved scale of salaries, particularly as it was carried by a majority of almost two to one at a very well attended meeting of guardians, and after ample notice had been given to all the guardians in the union that the matter would be dealt with at a certain meeting on a fixed date. One of the chief complaints made by Poor Law medical officers against the Local Government Board is that instead of immediately giving its sanction to a graded scale of salaries when passed, after ample notice, by the necessary majority of a board of guardians, it allows rescinding notices of motion, one after another, to be considered, until the guardians either become weary of passing the original scheme or fail to be present owing to pressure of private affairs, thus giving an energetic and sometimes vindictive opposition its opportunity to upset the decision of the majority. The Local Government Board's position in this matter is the unreasonable one that it does not consider itself justified in sanctioning increases of salaries until the majority is not only a majority of the guardians attending the meeting at which the increase was passed, but a majority of the guardians constituting the entire board whether they are present or absent. The action of the Local Government Board in this respect is altogether unnecessary, since it will not sanction any increase of salary unless every guardian in the union receives full and ample notice of the meeting at which the proposed increase is to be considered, so that it cannot be said when an increase of salary is granted that it was rushed without due notice.

Recruits for the Royal Army Medical Corps.

At the spring graduation ceremony of Queen's University, Belfast, on March 27th, Dr. R. W. Leslie, the representative of the university on the Irish Medical War Committee, spoke by invitation of the Vice-Chancellor upon the pressing need for medical men in the army. He expressed the hope that those who had recently graduated in medicine would at once give the matter their earnest attention and put themselves into communication with the Secretary of the Irish Medical War Committee, when the fullest information would be given them. He extended his appeal to the medical profession throughout Ulster, and especially to those of military age, to consider what their duty was in this serious crisis in their country's affairs. The urgency had never been so great as at the present time. Ireland was exempt not only from compulsory military service but also from the combing-out process which had been applied to the medical profession in England, but Dr. Leslie thought that that very fact imposed upon Irish practitioners an obligation of honour to rise to their country's call.

Correspondence.

THE CONFERENCE WITH LORD RHONDDA.

SIR,—I hope we may shortly have some more explicit information about the results of the deputation of the British Medical Association which went to the President of the Local Government Board the other day, and as to the scheme the Association has undertaken to prepare for submission to him. I gather from the report in the SUPPLEMENT last week that the deputation went to Lord Rhondda to discuss with him the scheme or schemes of the Local Government Board adumbrated—or may I say promulgated?—before he took office. These schemes were for the establishment all over the country of maternity centres for the benefit of expectant and actual mothers, and infant or child welfare centres for their offspring. The primary object of the deputation was to urge that in any such schemes the general or family practitioner should be given his rightful place. But apparently very little was said about maternity and child welfare, for Lord Rhondda made a speech before the deputation said anything in which he opened up a much wider subject, and with that subject the conference seems subsequently to have been almost exclusively occupied. He said, indeed, that he was going on with the Local Government Board bill for maternity and child welfare centres, and he afterwards laid stress on the fact that it was to be only an enabling bill, but his speech was mainly directed to overlapping in health work, and clearly he had in mind overlapping among central government departments, since the remedy he suggested was the formation of a single central health department or Ministry of Health. The overlapping, however, is not confined to the centre, but affects the local authorities also.

Sir Clifford Allbutt, the leader of the deputation, said that the desirability of having a Ministry of Health was now generally recognized, though he did not indicate its nature or scope, and the Chairman of the Insurance Acts Committee of the British Medical Association offered on

its behalf to elaborate a scheme for utilizing the general practitioner in a unified health department.

Simplification of the work and authority of the many medical sections of central government departments is desirable, and unification may be feasible, though it will not be an easy task. But we ought to get the terms defined. What is meant by a Ministry of Health? The comments which Lord Rhondda's speech has so far elicited in the newspapers seem to take it for granted that the nucleus of such a ministry would be formed by an amalgamation of the public health and Poor Law sides of the Local Government Board with at least the medical side of the work of the Insurance Commissioners, which would leave very little over to justify the continued existence of a separate insurance department. It would appear, too, that any change of this kind at the centre would require, as a logical consequence, corresponding change at the periphery.

It seems inevitable that the scheme Lord Rhondda has in view must raise the insurance question again. The present situation has arisen out of a proposal to extend the State's responsibility for medical treatment to certain women and infants. Probably most of the women it is designed to benefit will not be insured persons, but most of those who are not will be the wives of insured men. The scheme, even in its present limited form, is tantamount to extending free medical benefit to certain dependants of insured persons in certain circumstances and at certain ages; there seems no logical reason for stopping short of its extension to all dependants of insured persons. That Lord Rhondda has something of the kind in mind may be inferred from his speeches to the deputation and from expressions which occur in an interview with him published in the *Times* of March 27th, where it is said that he "desires to make his bill . . . the charter of the general practitioners," who "are the backbone of practical medicine in this country." We may ask what bill is here meant; surely not a little enabling bill about maternity and child welfare centres already prepared? If not, then there must be in contemplation some much larger measure, not merely for a Ministry of Health (with consequential reorganization of local administration), but also for an extension and reorganization of the Insurance scheme. Otherwise, why should Lord Rhondda lay so much stress on removing the suspicions and winning the co-operation of general practitioners?

It will be interesting to see the financial proposals in connexion with any such extension of the Insurance scheme, since the magnitude of the proposition would seem to preclude any such system of payment as exists in connexion with persons at present insured.

It is a great thing that the Minister most largely concerned with public health questions should recognize that the general practitioner is the backbone of the profession and seek his help, but that being so, has not the general practitioner the right to be told frankly and fully what is in the wind?—I am, etc.,

CUNCTATOR.

SIR,—Your article concerning a Ministry of Health (p. 430) will have been read with great interest by various readers, and by none more so than by medical officers of health. You have, in fact, set us trembling with hope that at last something is about to come to pass that will rescue the M.O.H. from the undignified and impotent position that he has for so long occupied in his connexion with the local councils, who are supposed to act by his advice, and whose resolutions he is generally expected to carry out.

I notice that the main tenor of the representations made by the deputation of the British Medical Association, led by Sir Clifford Allbutt, which conferred with the Local Government Board, was on behalf of the general practitioner or family doctor. The medical officer of health is, however, always a member of the medical profession, and usually a member of the British Medical Association, and as such may expect his interests to be looked after equally by the Council of the Association in its further deliberations and representations. It is really to the interest of all parties concerned that the position of the medical officer of health should now be defined, and I believe his chief desire is rather that he may be clearly informed as to his position and powers than as to what those powers actually may be. For his peace, as well as for his potence, it is essential that all parties should be agreed as to whom and what he is, and should loyally support him in the position assigned to him. I do not suppose that there is any medical officer devoting himself to public health work who is not prepared loyally to exert himself so far as his ability and position will permit on behalf of his fellow members of the medical profession. But the claim in this regard is not one-sided. He has a right to expect as much from other medical practitioners as they have from him, and it may be that this has not always been remembered.

The sentence in your article which attributes to Lord Rhondda the limitation of present action to "an enabling bill" raises fearful visions of the numerous fatuous attempts to legislate effectively by permissory powers that have already been made. Your article refers to this matter in one part, and surely there is accumulated evidence enough at the Local Government Board to correct any tendency on the part of Lord Rhondda to a belief in the effectiveness of local councils, as at present elected and constituted, when they are left to adopt and put into execution provisions that are merely suggested in an Act of Parliament.—I am, etc.,

April 2nd. EXPERIENCE.

THE DANGER OF SMALL-POX.

SIR,—In a recent lecture delivered before the Royal Dublin Society I took occasion to warn the people of the danger arising from imported small-pox, and advised them to endeavour to protect themselves and their children by vaccination and revaccination. In a letter that appeared in the JOURNAL of March 24th Dr. C. Killick Millard avails himself of this opportunity to give renewed expression to his now well known views on the subject. These opinions he has embodied in the very ably written book to which he refers, and, despite the fact that they have failed to gain acceptance from the vast majority of those concerned in public health administration, he continues to put them forward with much dialectic skill and argumentative resource. He would have us believe that it is not infantile vaccination but modern methods of administrative control that deserve the credit for having virtually abolished small-pox from our midst. Now, I would submit that there was no sudden improvement in sanitary administration about the beginning of the nineteenth century to account for the way in which the small-pox mortality came tumbling down—literally by leaps and bounds—about that time. What improvements in sanitary administration came about in Ireland during the earlier decennial periods for which we have records that could account for such figures as the following:

Period.	Small-pox Mortality.
1841—1850	38,075
1851—1860	12,727
1861—1870	4,113
1871—1880	7,554
1881—1890	241
1891—1900	235
1901—1910	56

and no death from small-pox since 1907?

If Dr. Millard agrees that vaccination is responsible for this precipitous fall in the curve of small-pox mortality, he must surely admit that it is a powerful weapon against the disease—not merely in the individual but also in the community at large. If so, why discard it?

Dr. Millard says that improved sanitary measures can control the disease. But have they ever been tried as against a virulent type of the disease in a totally unvaccinated people? Until this has been done with success, I maintain that to neglect the most certain weapons which we have at our disposal and to place our reliance solely upon untried ones is, to say the least, a hazardous experiment.

Dr. Millard asks how it is that small-pox mortality continues to fall *pari passu* with a steady and rapid decrease in the rate of infantile vaccination. I reply that, owing to the almost universal adoption of vaccination amongst civilized nations, the supply of virus is to a large extent cut off. The still partially protected population continues to offer considerable resistance to the spread of small-pox. If, however, the number of unprotected individuals is allowed to mount up beyond a certain critical

figure, the probability is that the disease will "flare up" with disastrous results.

Dr. Millard goes on to ask how it is that in Ireland, where the proportion of children vaccinated has always been less than in Great Britain, the disappearance of small-pox has been most complete? Here Dr. Millard is misinformed. Ireland, on the contrary, is, and has been for many years, better vaccinated than England. If he looks up the figures, he will find that in 1905, when vaccination in England reached its acme, the proportion of successfully vaccinated infants to every 100 born was in England 76 and in Ireland 82. In 1913 the percentage in England was a shade over 50, whilst in Ireland it was 66. The figure is now rising again in Ireland, whilst in England it continues to fall. In Ireland we have, therefore, more children vaccinated and less small-pox than in England. Let Dr. Millard draw his own conclusions.

Dr. Millard quotes the case of Leicester, and here it may be at once conceded that under his own active administration, including, as it does, ample accommodation for the isolation of declared cases and the quarantining and observation of contacts, etc., outbreaks of small-pox have on several occasions been stamped out without recourse to compulsory infantile vaccination. But I would submit that all populous centres are not blessed with so efficient a system as Leicester nor are efficient sanitary measures and vaccination mutually exclusive. Why not use the one to help the other?

The most important point in this connexion seems to me, however, to be this—the successful results obtained at Leicester have been realized under conditions that have grown up under, and been brought about by, compulsory infantile vaccination. Leicester is surrounded by a ring fence of vaccinated populations, and many of its adult inhabitants still rejoice in the partial immunity conferred on them in childhood. The results, such as they are, do not seem to me to justify the abandonment of the weapon by the aid of which (*pace* Dr. Millard) they have been rendered possible. Small-pox is scotched, not dead. To strive to defend the community without compulsory infantile vaccination—the weapon that has proved so effective in the past—seems to me a hazardous experiment, and I sincerely trust that Dr. Millard may not some day have reason to regret having tried it.

Dr. Millard would throw on infantile vaccination the blame for the spread of epidemics, because of the mild and modified cases that occur amongst the vaccinated and may escape recognition. This, he says, may seem to some a hard saying. I would suggest that to most administrators it would seem a misleading one. By universal compulsory infantile vaccination and revaccination the community can be brought into such a state of resistance that scarcely any save modified cases occur. Would Dr. Millard prefer to see none save virulent ones? In a given case would Dr. Millard advise a doubting parent not to have his child vaccinated in order to save the community at large from this source of danger? Moreover, in some epidemics, mild cases not easily recognized occur even amongst the unvaccinated.

With regard to the outbreaks of small-pox reported from Germany, it seems not improbable that the disease has broken out amongst prisoners of war—probably from the Eastern front. The meagre references in the papers do not enable a judgement to be formed as to the extent to which the German population has been attacked. No doubt we shall soon learn the details, and meanwhile I would submit that it is a little premature to gloat, as Dr. Millard does in the second-last paragraph of his letter, over the occurrence of small-pox amongst a vaccinated and a revaccinated people. The whole tone of his reference to this matter is highly suggestive of the confirmed anti-vaccinist, and sounds strangely, coming from one who in the very next sentence declares his faith in the power of recent vaccination to defend the individual.

This letter is already too long, but I would crave permission to point out, in conclusion, that in addressing a warning to an Irish audience I was speaking to people who have, generally speaking, no strong prejudice against vaccination. True, during the past eight or ten years, owing to the wrong-headed activities of (mostly imported) antivaccinist propagandists, a small minority of sanitary authorities have neglected their duty to enforce vaccination. But, under the threat of legal proceedings by the Local Government Board, most of them have seen the error of their ways and issued instructions for the prosecution of defaulters. The result is already apparent. The latest available figures show a marked improvement in the vaccination rate. The remarks to which Dr. Millard takes exception constituted an effort on my part to assist in this endeavour to get the people vaccinated. In the absence of a well-developed system of sanitary administration, I would ask Dr. Millard what better advice could I give them? Let him remember that in Ireland we have no whole-time county medical officers of health. Let him also remember that our people in Ireland do not share that horror of vaccination which is so prevalent in the English midlands, and which seems to be based on deep-seated suspicion of the medical profession and profound antipathy to modern bacteriological methods of dealing with disease. If, by means of a little gentle suasion, practically the entire population can be induced to accept vaccination, why wait before doing so until small-pox has already appeared in our midst? Such a course seems like deferring the training of the youth of a country until invasion has actually taken place, whereas had they been previously trained invasion would have been impossible. In all seriousness I would ask Dr. Millard, would he, under the conditions that prevail in Ireland, and with the threat of imported small-pox hanging over us, advise the people not to have their children vaccinated?—I am, etc.,

Dublin, March 31st. E. J. MCWEENEY.

THE NATURE OF SURGICAL SHOCK.

SIR,—With reference to the interesting experimental work described on p. 381 of the BRITISH MEDICAL JOURNAL of March 24th, may I recall some clinical observations published in my Hunterian Lecture for 1913 (*Lancet*, 1914, i, 371; also printed in my *Newer Physiology*, third edition)? I showed that in traumatic shock there is no change in the volume of the blood as evidenced by the specific gravity, but that there is a marked concentration after severe burns.—I am, etc.,

Clifton, Bristol, March 27th. A. RENDLE SHORT.

ALIEN ENEMY PRACTITIONERS.

SIR,—At a time like the present, when medical men are asked to leave their homes and their practices and join the army, is it not necessary that our Association should see that no medical men of German or Austrian nationality should be allowed to remain behind in this country and continue to conduct his practice as in pre-war times? Is it not the case that medical men of enemy origin and of military age are now practising their profession in the very heart of London?

After all that has been written of the brutal conduct of the medical men belonging to the enemy towards our prisoners, I think we ought not to allow any German or Austrian to be at large carrying on their practice and no doubt increasing their incomes by taking the patients of those medical men who have joined the army.

Our Association ought to make strict inquiries and put a stop at once to this position of affairs. Is it not possible to take from them their British qualifications?—I am, etc.,

Forest Gate, E., March 31st. ROBERT HUGH ALLEN.

Obituary.

HAMILTON WRIGHT, M.D.,

WASHINGTON.

WE regret to record the death at Washington, U.S.A., of Dr. Hamilton Wright at the age of 49. While assisting with relief work in France he met with a motor-car accident; besides breaking many ribs he suffered a great nervous shock, from which he never completely recovered. Just before Christmas he developed pleurisy and then pneumonia. He seemed to be getting better when suddenly, on January 9th, a blood clot formed in the heart, and death ensued in a few hours. Dr. Hamilton Wright was brought from McGill University to Cambridge by the late Sir Michael Foster as John Lucas Walker Scholar, and worked at the university at neuropathology. Subsequently he became assistant to Dr. F. W. Mott at the

Pathological Laboratory, Claybury. While holding this appointment he worked at the pathology of tabes, and made a number of experiments on animals with the view of demonstrating chromatolytic changes in the ganglion cells of the brain by prolonged chloroform narcosis. He was next appointed by the Colonial Office to investigate beri-beri in the Straits Settlements. By his energy and industry he induced the authorities to build under his supervision an admirably equipped laboratory at Kuala Lumpur. Here he made some notable researches on beri-beri. By his experiments and observations, extending over three years in the Kuala Lumpur gaol, he combated many theories concerning the causation of beri-beri. He objected to Braddon's theory that the disease is due to the ingestion of a specific organism which develops on growing rice by pointing out that it was not to be believed that the Siam or Rangoon rice of the gaol held an active specific organism or toxin after being steamed for two hours under two atmospheres of pressure. His own conclusion was that food, including rice, was simply an agent of transmission.

That beri-beri is due to a specific organism which remains dormant in certain localities, but having gained entrance to the body by the mouth it multiplies locally (in the stomach or duodenum chiefly), gives rise to a local lesion and produces a toxin which, gaining the general circulation, acts on the peripheral terminations of both afferent and efferent neurones to cause a bilateral symmetrical atrophy; and that, finally, the organism escapes in the faeces to again lie dormant in places.

Although the polished rice and vitamine theory holds good, it does not exclude the possibility of a micro-organismal toxin (such as Wright's experiments and researches postulates) acting as an essential coefficient.

In 1909 Hamilton Wright returned to America, and was appointed by President Roosevelt to the International Opium Commission, and attended the meeting of that Commission at Shanghai. He was deputed by the Department of State to take charge of preparations for the International Conference at the Hague in 1911. He was afterwards chairman of the American delegates to the Second Conference at the Hague in 1913. Dr. Wright prepared a bill for the suppression of the opium trade known as the Harrison bill, which passed Congress soon after the second Hague Conference. He was a member of a number of American societies, notably the Washington Academy of Sciences.

Dr. Wright was an able scientist and a cultured man with a fine presence. He possessed organizing ability which, combined with courage and common sense, led to a purposeful directness in his undertakings. His ambitions were great, and he would have attained even a higher position had he not been cut off at a comparatively early age. He published many valuable reports and monographs on medical subjects. Being an excellent public speaker he became a valuable political advocate for medical science.

Dr. Hamilton Wright early in his career married Elizabeth, daughter of the late Senator Washburn; by whom he had five children.

THE death occurred on March 22nd of Dr. LEONARD KING HAVELOCK HACKMAN of Portsmouth, the town in which he was born. He received his medical education at St. Mary's Hospital and took the diploma of L.S.A. in 1879 and those of L.R.C.P. and S.Edin. the following year. He was an active member of the Southern Branch of the British Medical Association, of which he was for some time honorary secretary. Since the outbreak of war he had done military work, being medical officer in charge of the staff and departments and families of the Portsmouth Garrison. When Portsmouth decided that its police officers and constables should be instructed in first-aid duties, Dr. Hackman became one of the most enthusiastic instructors. He was recently elected vice-president of the Portsmouth Federation of the Church of England's Men's Society, in which he took great interest. Dr. Hackman was one of the original members and founders of the Borough of Portsmouth Philharmonic Society.

DR. CABADÉ, who died recently, was in practice at Valence d'Agen till 1882, when he gained by competition an appointment as deputy professor in the medical school of Toulouse. He was successful as a teacher, but when the school was transformed into a university faculty some years later he did not obtain the chair to which he thought he had a right to aspire. Discouraged by this failure he went back to Valence, where he was welcomed by his old patients. But medicine had lost its attraction for him, and he retired to a retreat which he had made for himself on an island in the Garonne. There he gave himself up to the study of Petrarch, whose sonnets he translated. The book gained for him a considerable reputation, and Italy was so grateful to him that when Petrarch's sixth centenary was celebrated recently, Dr. Cabadé was invited to be one of the French delegates on the occasion. He was the author of a number of poems, none of which he allowed to see the light except a Hymn to the Sun, which was published in the *Journal de Médecine de Bordeaux*.

Universities and Colleges.

UNIVERSITY OF LONDON.

THE Director of Recruiting has notified that under present arrangements no member of the O.T.C. who produces a certificate from the officer commanding the contingent that he has been recommended to join an officers' cadet unit will be called up until he had attained the age of 18½ years.

Professor A. D. Waller, M.D., F.R.S., has resigned his membership of the Senate as one of the representatives of the Faculty of Science, as from March 22nd, 1917.

Applications for the Lindley studentship of £100 offered every third year, and also for the University studentship in Physiology (£50 for one year) awarded to students qualified to undertake research in physiology must be received by the Academic Registrar (from whom full particulars can be obtained) by April 30th and May 31st respectively.

UNIVERSITY OF LIVERPOOL.

THE following candidates have passed the examination indicated:

FINAL M.B., B.CH.—*E. S. Stubbs, †I. J. Lipkin, †P. B. Pinkerton, Mikhail Azar, Constance Edwards, Shaikh Mohomed Afzal Faruqi, A. J. B. Griffin, R. Nixon, C. V. Pearson, Ratt'n Chand Watts.

* With first class honours. † With second class honours.

UNIVERSITY OF EDINBURGH.

THE following candidates have been approved at the examination indicated:

FINAL M.B., CH.B.—J. Aitken, J. Allison, R. M'M. Bowman, J. B. Hanna, J. L. Hill, R. J. M. Horne, T. J. Howell, J. E. Hurworth, Y. C. Lee, D. Lennox, J. T. C. M'Auslin, M. M'Kerrow, J. M. Martin, W. R. Matheson, C. J. van der Merwe, A. J. Muirhead, J. H. Neill, J. M. Norman, H. Patlansky, A. Robertson, Susan A. Robertson, Joan K. Rose, L. C. Rudd, R. B. Smith, C. W. Stump, C. G. Terrell, D. W. Warren.

QUEEN'S UNIVERSITY, BELFAST.

AT the spring graduation ceremony, held on March 27th, the following degrees were conferred:

M.CH.—J. W. West.

M.B., B.CH., B.A.O. *R. N. B. M'Cord, †W. L. Agnew, †J. Scott, †J. Wilson, J. Adams, S. T. Alexander, P. Clarke, J. H. Davison, J. H. B. Hogg, L. Jefferson, W. C. M'Cullough, P. J. M'Sorley.

D.P.H.—Mary G. Caskey, D. L. M'Cullough.

* With first class honours. † With second class honours.

The Vice-Chancellor (the Rev. Dr. Hamilton) in his address to the new medical graduates, said that there never was a time when the country more needed or more appreciated the services of the medical profession than at this critical period. He paid a warm tribute to the work of the R.A.M.C., and pointed out the serious responsibilities of those now entering the medical profession. In the absence of the Dean of the Faculty of Medicine (Professor W. St. Clair Symmers), the new graduates were presented to the Vice-Chancellor by Professor Sir William Whitla. A note of Dr. Leslie's speech on the need for medical recruits will be found elsewhere (p. 468).

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AT a meeting on April 2nd the President, Dr. Frederick Taylor, delivered the customary presidential address, in the course of which he said that during the past presidential year the College had lost by death six Fellows, eight Members, one extra Licentiate, and 195 Licentiates. He read a long list of the honours, military and civil, conferred on Fellows, Members, and Licentiates, and gave a summary of the principal matters which had been discussed by the College and its various boards and committees. The President then read obituary notices of the Fellows who had died during the year, and in conclusion expressed his thanks to the officers of the College for their assistance. At the instance of Sir W. S. Church, a vote of thanks was adopted, and Dr. Taylor, after returning thanks, vacated the chair. A ballot was taken, and Dr. Frederick Taylor was re-elected President.

Medical News.

DR. LEE F. COGAN, Mayor of Northampton 1911–1912, has been placed on the Commission of the Peace for the county borough of Northampton.

Knowledge, the scientific magazine founded by the late Mr. Richard A. Proctor thirty-six years ago, which has hitherto appeared monthly, will be published four times a year during the war. The price will remain 1s.

A MEETING of the Yorkshire Branch of the Society of Medical Officers of Health, which all members of the profession are invited to attend, will be held in the School of Medicine, University of Leeds, at 2.30 p.m. on April 16th, when Colonel Harrison, R.A.M.C., Rochester Row Military Hospital, will deliver an address on venereal disease in relation to health, diagnosis, and treatment.

DEMONSTRATIONS open to medical students and practitioners and first-aid and ambulance students will be given in the museum of the Royal College of Surgeons of England by Professor S. G. Shattock, Pathological Curator, on syphilis on Monday, April 16th, and on gunshot injuries on April 23rd and 30th, at 5 p.m. on each day.

THE American Society for the Control of Cancer, founded in 1913, has recently presented a report to the Congress of Physicians and Surgeons under whose auspices it was established. The main lines of the society's work are to carry on a campaign of public and professional instruction by newspaper articles, leaflets, and lectures, and to organize statistical research. Branch committees are formed in the several states and cities. Many health boards are taking an active part in the campaign. At the suggestion of the society the Director of the United States Census has ordered the publication of a special report on the cancer mortality in 1914 which is now in the press. The society has also undertaken the collection of reports of operations for cancer. The records thus obtained will be followed up at intervals of one year by inquiry addressed to the surgeon, and the results will be analysed and tabulated by statistical experts.

Letters, Notes, and Answers.

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C., on receipt of proof.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are: (1) EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2631, Gerrard. (2) FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Medisecra, Westrand, London;* telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

ANSWERS.

SCOPOLAMINE-MORPHINE TREATMENT DURING LABOUR.

IN response to the inquiry of a correspondent, Dr. Oswald Greenwood, whose paper on this subject was published in the JOURNAL of March 17th, sends the following particulars with regard to the doses he used: The initial dose has varied, some cases having had morphine gr. $\frac{1}{4}$ + scopolamine hydrobromide gr. $\frac{1}{100}$; others having had morphine gr. $\frac{1}{6}$ + scopolamine hydrobromide gr. $\frac{1}{100}$. The subsequent doses have varied much more and have ranged from a minimum of scopolamine hydrobromide gr. $\frac{1}{400}$ to a maximum of scopolamine hydrobromide gr. $\frac{1}{100}$. The total number of doses has also varied very widely—from two in the case of a rapid multiparous labour to nine in the case of an older primipara with a slowly dilating os uteri and resistant soft parts.

LETTERS, NOTES, ETC.

THE LOUSE PROBLEM.

DR. HUGH LAWRIE, M.O.H. Ramsbottom Urban District, writes to say that he has found methyl salicylate liniment very useful in the treatment of *Pediculus capitis* infesting the heads of school children. A few drops rubbed on the hair, at first every two or three days, then about once a week, and brushed in, rids it of both lice and nits in about a week and prevents reinfestation. In the case of a young soldier home on leave last October, who had been particularly annoyed by body lice during sixteen months' continuous service in France, use of the same liniment proved of great service. The man states that when he gets a bath and a change of clean clothing he rubs his skin with the liniment, and finds that it keeps lice away. As our correspondent himself suggests, the difficulty of obtaining the salicylate derivatives may stand in the way of the use of this remedy on any large scale. Another correspondent, Dr. Francis C. Parkes (Lostock Gralam, Cheshire) states that country people steep infested shirts and underwear in a solution of alum in water for twenty-four hours, and find it a most efficacious method of ridding the garments of lice. He is not able to state the strength of the solution.

SUCCESSFUL PROSECUTION OF A HERBALIST.

AT the Bath City Police Court, on March 30th, Perkins Stretton was summoned on two charges: (1) Using the title "medical practitioner," thereby giving the impression that he was registered under the Medical Acts. (2) Using the designation "M.B." without being legally qualified as a medical practitioner. Mr. W. E. Hempson prosecuted on behalf of the Medical Defence Union. The defendant, owing to ill health, did not appear, but Mr. W. F. Long, who represented him, pleaded not guilty to both summonses. According to the report of the proceedings in the *Bath and Wilts Chronicle*, Mr. Hempson, after explaining the motive of the Medical Defence Union in prosecuting, said that the defendant, Stretton, carried on business in Bath, and was prepared to treat all who came to him. The parents of a boy who was not well enough to go to school needed a medical certificate for the Education Committee. The mother received one of the usual blank certificate forms requiring a medical practitioner's signature, and took it to the defendant, who inquired about the child's condition, and signed a certificate "P. Stretton, M.Bot." above the words "medical practitioner" which appeared on the form. The certificate stated that the boy was suffering from acute bronchitis. With regard to the unauthorized use of the designation "M.B.," Mr. Hempson produced photographs of the outside of the defendant's shop, showing a lamp on either side of which was a red glass bearing the letters "M.B." with others. The whole arrangement resembled a doctor's red lamp. In the shop below was an intimation that consultations were free, and the letters "M.B." were also exhibited within the establishment. Mr. Hempson's clerk, who later gave evidence, consulted the defendant, who examined him with a stethoscope, but did not take his pulse or temperature or look at his tongue. After this investigation Stretton certified him to be suffering from acute bronchitis and asthma, and requiring a period of rest before he could resume his duties. This certificate also was signed "P. Stretton, M.Bot." The clerk, who was in perfect health, returned to town that night, and had been at work ever since. The certificate was granted him for the purpose of obtaining sick pay from his club. Mr. Hempson pointed out the necessity of the prosecution, not only in the interests of the medical profession, but still more so in the interests of the public, and he asked the Bench, if they were satisfied that the case had been proved, to inflict a smart penalty. Evidence having been given in support of the two summonses, Mr. Long addressed the Bench for the defence. He argued that defendant had for years been regarded as a herbalist, and nobody dreamt that he was a bachelor of medicine, or that he was describing himself as a medical man; the additional letters on the red glass plate should suffice to put people on their guard. He admitted that Stretton acted unwisely in signing the boy's certificate without seeing him, but asked the Bench to impose a lenient penalty. Mr. Hempson, in reply, submitted that the letters "M.B." had an accepted significance in medicine, and that with regard to the certificate, defendant had convicted himself. The Mayor said that the magistrates found the defendant guilty on both summonses. For signing the certificate there would be a fine of £10, with special costs of £7 6s.; on the other summons a fine of £15, with special costs £5 5s.—a total of £37 11s. The penalty in default of payment would be one month's imprisonment in each case. The Medical Defence Union is to be congratulated upon securing a conviction on both counts. In view of the defendant's claim to the right to use the letters "M.B." as connoting "Medical Botanist," the magistrates' finding on the second summons is of importance.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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Seven lines and under	0	5	0
Each additional line	0	0	8
A whole column	3	10	0
A page	10	0	0

An average line contains six words.

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NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.